COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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The Market Outlook

CONDITIONS appear to point to a season of strong demand for coal, of car shortages and high prices. The usual landmarks by which the trade judges an oncoming orgy of coal buying are lacking, however, and many find themselves lost and uncertain. To quote a specific case, a shipper began shipments of eight cars per day to a regular contract customer immediately after the strike settlement in August. Arrivals have averaged one car per day, the remainder being lost in the transportation tie-up. Now, under ordinary conditions that customer would have doubled his order and begun to buy wildly on the open market in fear that he never would get the coal he required. Instead he halved his order. Mines are running on short time, getting cars for one and two days per week. Yet the price is gradually softening and buyers appear confident and cocky.

In 1921 there was produced 415,000,000 tons of soft coal and 90,000,000 net tons of anthracite, a total of 505,000,000 tons. Production of soft coal to Sept. 30 this year was in round numbers 271,000,000 tons and of anthracite, 27,000,000 tons, a total of 298,000,000 tons. By the end of September last year the figures were 295,000,000 tons of bituminous and 69,000,000 tons of anthracite, a combined total of 364,000,000 tons. Thus the output of bituminous coal to date is some 24,000,000 tons less than last year, and that of anthracite about 42,000,000 tons behind.

Stocks of bituminous coal in the hands of consumers on Jan. 1, 1922, were about 47,000,000 tons; they are now not over 12,000,000 tons—some would say even less. This represents a drop of 35,000,000 tons, all consumed in the calendar year in addition to current production. In the corresponding period of 1921 stocks were reduced from 47,000,000 to 42,000,000 tons, or by 5,000,000 tons. In other words, in the first nine months of 1921 consumption plus exports of bituminous coal were 300,000,000 tons as compared with 306,000,000 tons this year.

At the rate at which coal is being consumed the country should have on Jan. 1 next a stockpile of between 35,000,000 and 40,000,000 tons to weather safely the real winter months of January, February and March, when cold and storms delay the movement of freight. That is to say, taking the more conservative figures both as to present and required stocks, some 23,000,000 tons must be added to reserves in the following thirteen weeks of this year. The outside figures indicate 40,000,000 tons as necessary to put the country on the safe side. This will be in addition to coal required for current consumption.

If we assume that the normal consumption of anthracite is 12,000,000 tons per month in coal-burning weather, then for the last quarter of 1922 requirements will be 36,000,000 tons. The prospect is for a production not to exceed 25,000,000 tons, leaving a deficit of not less than 11,000,000 tons to be supplied almost entirely by raw bituminous coal and coke. This added to the minimum estimate of 23,000,000 tons to replenish stocks by Jan. 1 gives us, at the lowest estimate, 34,000,000 tons over and above current consumption. That is, in addition to around 9,000,000 tons of winter consumption per week of soft coal there will be required an added load of nearly 3,000,000 tons to build up stockpiles and to pinch hit for hard coal. To those familiar with the anthracite situation this figure of 11,000,000 tons will appear absurdly low, for it is predicated on absolutely uniform distribution each week. The actual demand for hard coal that cannot be supplied currently will be much greater.

The mines, of course, can produce the 12,000,000 tons per week of soft coal thus indicated as necessary, but can the railroads haul it? They have developed real car shortage at less than 10,000,000 tons per week and it is quite obvious that a weekly average of 12,000,000 tons for the rest of the year is out of the question.

The question that is puzzling the coal trade is how to reconcile the apparent requirement for 12,000,000 tons a week of soft coal with an apathetic demand for around 10,000,000 tons. Beyond doubt the country is consuming coal in greater quantity than at this time last year and consumption is on the increase. Stocks in the aggregate are extremely low. Anthracite is lacking. Yet the market does not respond. Testimony of coal salesmen is to the effect that the small industrials are rather well stocked and are not eager for coal. They are not consuming coal at anything like the rate they have in previous periods of good business. Industrials burning a car or less per week represent 75 per cent in number of this class. They consume but 10 per cent of the coal used by industry, yet they normally carry around 20 per cent of the stocks.

The larger consumers are purposely staying out of the market for all save current requirements. An organized effort, engineered by the government through the National Chamber of Commerce, the National Association of Purchasing Agents and others, is being made to hold back the purchase of coal by 25 per cent of industrials—the big fellows—who consume 90 per cent of the coal used by industry, and also to restrain the railroads using 27 per cent of the total production. A demand for some 2,000,000 tons of soft coal per week for winter storage is being artificially held in check. Herein lies two-thirds of the answer.

Buying of soft coal to substitute for hard coal has not begun, and therein lies the remainder of the answer.

If 10,000,000 tons a week is as much bituminous coal as the railroads are going to give the country, then the future market depends entirely on the efficiency of the machinery set up in Washington to regulate coal. If Mr. Spens can so direct the flow of coal this winter that no consumer will be worried no matter how low his reserves may become or how much the railroads may be tied up by storms, then demand will not outrun production and prices will not unduly mount. The alternative is clear.

The American Mining Congress

AS AN institution the American Mining Congress is rounding out its twenty-fifth year—a quarter century of effort to promote in a national way the mining industry. It has achieved much. Perhaps its greatest achievement has been to give to mining a national consciousness, to fuse the interests of copper and coal, of iron and oil, of lead and gold in those spheres of action and thought where there is a common problem, a mutual interest and a universal contact. Not the least important of its fields of usefulness lies in bringing the East and West together, in spreading the knowledge about coal to those who know the metals and in bringing home to those who mine coal the life and problems of those who mine ores.

The activities of the American Mining Congress lie in two directions. One of these is toward the general public and hence we find its headquarters in Washington, where the representatives of our federal government are congregated. The day-to-day work of the energetic secretary, Mr. Callbreath, and his staff is that of keeping in touch with the national legislators and the many departments at Washington, in nearly all of which there is always under consideration some matter of interest to the mining industry.

Frankly and openly the Mining Congress has represented the mining industry at Washington. It has opposed some and has favored other legislation but in all its dealings with official Washington it has been frankly pro-mining. It has come to be recognized as fairly representing a powerful business constituency. Committees of Congress unhesitatingly call on it for suggestion, advice and counsel when matters affecting mining are under consideration. Its function in this respect is a continuing piece of work covering a wide range of subjects and requiring a close contact and never-ending attention to details. In the best sense of the word the American Mining Congress is the official lobbyist for the mining industry, but in this it neither threatens, trades nor cajoles. It limits itself strictly to advice and information and finds legislators who do not know anthracite from soft coal quite eager to listen to its counsels and to make use of its fund of facts. Such is its principal purpose, its greatest opportunity and its warrant for continued support and existence.

In any community there are comparatively few individuals who voluntarily take on the burdens and responsibility of civic progress. The active support and promotion of better government comes from a small minority. The same is true as respects an industry. It is the few who have the vision, energy and will to work for the common good. To muster the support of the many there has been developed the association through which the majority are prodded and inspired into concurrence with the programs of the active thinking minority. Thus we find the other important activity of the American Mining Congress is holding conventions—bringing members and adherents together, arousing enthusiasm, building support, moral and financial, and rendering part payment in education.

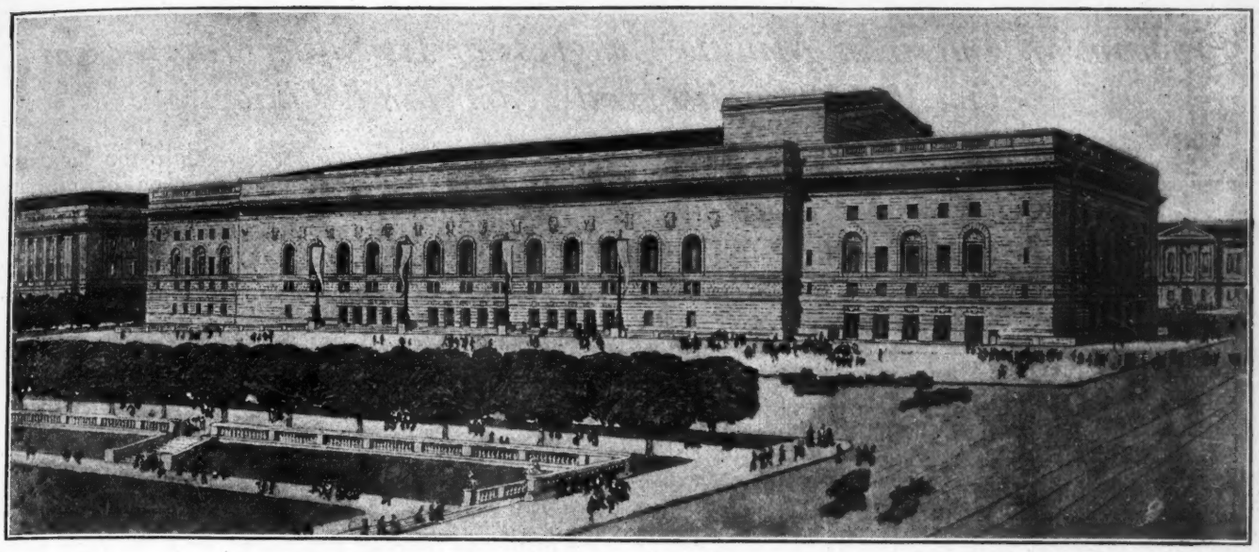
The annual conventions of the Mining Congress are real forums for the development of opinion. Here the business and political interests of the mining industry as distinguished from the engineering find their common ground. Taxation, cost accounting, legislation and industrial relations are among the subjects regularly discussed. It does everyone good to go and express his views as well as to hear what others have to say. The exchange of ideas is the worth-while production of a convention, of which this is typical. These meetings are seldom productive of concrete results, but they do help crystallize opinion and develop policy. Occasionally some tangible result, like the creation of the Bureau of Mines, can be traced to the activities of such an organization, but in the main what the participants carry away from the annual conclaves are ideas and renewed friendships.

In recent years an engineering slant has been given to the activities of the Mining Congress. The enthusiasm and energy of two men, Colonel Warren R. Roberts and Charles A. Mitke—one in the coal industry, the other in metal mining—have built up under the wing of the Mining Congress a National Standardization Conference for the mining industry. This year will be the third of such meetings. Standardization, co-operation, co-ordination and stabilization have become abused words, but each has an important place in the lexicon of the mining man.

The work of the Standardization Conference has not progressed far enough to demonstrate how far it may go or in what direction it eventually will lead. Obviously enough the aim is better engineering and more of it as well as better machinery and more of it. If it were sought to accomplish this by reducing all machines and methods to common types, the idea would fail. Fortunately, this is not the purpose. Standardization is not the word to define the definite engineering conception that is behind this movement, which is something different than that at the foundation of such organizations as the Institute of Mining Engineers.

Every convention must have a slogan. That announced for the silver anniversary of the American Mining Congress is "Greater Prosperity Through Lower Production Costs." To assist through the eye the preachment of this theme there will be an exhibit of many kinds of machinery—an exposition of mines and mine equipment. Thus do the promoters of the Mining Congress provide incentive for attendance, for these exhibitions are worth while, gain added support from manufacturers and tie the engineering and operating contingents together with the business and political.

In these multifarious activities of this organization we find at once its weakness and its strength. Cosmopolitan, it embraces every aspect of mining from drainage to politics and draws support from many fields. But because it is so all-inclusive it can give to none the intensive advantages of a partisan association. Thus we find the separate organizations for gold and silver, for zinc, for copper, for coal, overlapping in membership with the larger group, but having distinct objects. The American Mining Congress gives to the coal industry a contact with the remainder of the mining industry and it is just as essential that the coal men bear their part in its support and deliberation in order that the country may have a true picture of mining as its greatest basic industry as that the coal men have their own association and organizations for promoting their peculiar and particular objectives.



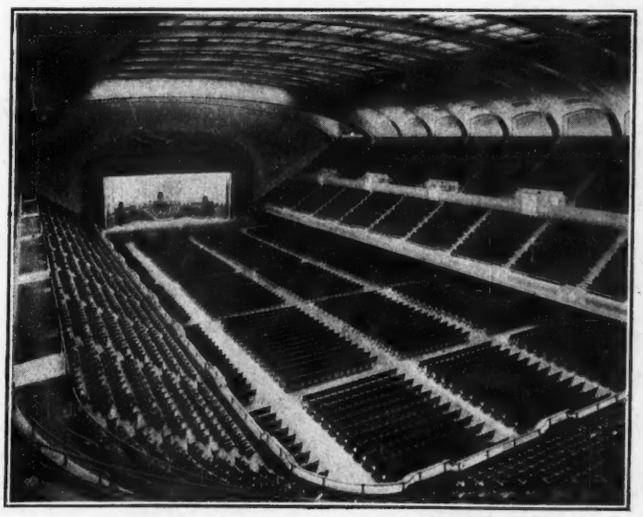
Where the Mining Congress Will Meet, And What It Is Doing for the Industry

IT IS easier to prevent bad legislation than it is to repeal it. It is less difficult to correct a false judgment before it is uttered than to recall it when once it has gone forth. The American Mining Congress, being stationed at Washington, can prevent wrong at the source, for legislators, like other mortals, sin more often from lack of knowledge than from Adamic perversity.

The American Mining Congress officials are frequently consulted because, it would appear, they are believed to represent the mind and heart of the industry rather than its will. The Mining Congress is a loosely organized body, not a symbol of the power of a dominating industry but an expression of the mind of individuals. At the yearly meetings the legislators and the members of governmental departments and bureaus mingle with the legislated; they learn to know its members as men like-minded with themselves. The program is not carefully staged beforehand; rather it brings together many contrary minds. The men who attend it from outside the industry regard its assembly as if it were one of "just home folks." It is not a trades council; it is rather an institute for gathering new ideas. It impresses the outside man not as a battering ram to enforce an unholy will but as a gathering of men having kindred interests seeking guidance. It is not a force to be met with force but an open hand to be grasped.

The legislators who consult it probably do not know why. They cannot tell perhaps wherein they find it different from better organized, more representative bodies. Those, however, who frequent it year by year know that its strength is in the open forum, where those without the industry and those within rub shoulders and learn fellow sympathy. No doorkeepers are at the gate, no tickets of admission are demanded, and for this reason it commands confidence and accomplishes results.

First among its good qualities is that it has never created antagonism. Blithe with optimism, the American Mining Congress has never seen even a black cloud in the Congress on Capitol Hill. It has always believed that with the word of reason and the warmth of a handshake every evil anticipated could be averted and that all that is needed is that the men in the halls of Congress should know that mining men were seeking treatment in no way different from that imposed on other men. From mine and farm come the essentials of life but that is no reason why they should be made victims of special and inimical legislation.



Above—Public Hall, Cleveland, Ohio, where American Mining Congress will meet and Exposition will be held

Left—Auditorium in Hall where will be celebrated the Twenty-Fifth Anniversary of the Mining Congress

NOTE—The architect's drawing and photograph herewith are shown by courtesy of J. H. MacDowell, architect.

Program of American Mining Congress at Its Silver Anniversary, Oct. 9-14, Public Hall, Cleveland, Ohio

The Mine Taxation division will hold its third national conference on Oct. 9, 10 and 11, when the following papers will be presented:

Valuations of Mining Properties for Purposes of Federal Income Taxation, by R. C. Allen, Cleveland, Ohio, vice-president, Lake Superior Iron Ore Association; member of committees on state and federal taxation, American Mining Congress; formerly member Tax Advisory Board, Treasury Department.

Invested Capital of Mining Corporations, by George E. Holmes, New York City; author "Holmes on Federal Taxes"; chairman special committee on state taxation of mines and vice-chairman general committee on taxation, American Mining Congress.

Special Cases under Section 210 Revenue Act of 1917, and Sections 327 and 328, Revenue Acts of 1918 and 1921, by Robert N. Miller, Washington, D. C.; formerly Solicitor of Internal Revenue; member committees on state and federal taxation, American Mining Congress.

Depletion Dividends, by Paul Armitage, New York City; chairman general committee on taxation; member special committee on state taxation, American Mining Congress.

Mine Accounting Methods in Relation to Federal Taxes, by T. O. McGrath, Bisbee, Ariz.; author "Mine Accounting and Cost Principles"; chairman committee on mine accounting, standardization division, American Mining Congress.

Settlements and Compromises with the Commissioner of Internal Revenue, by McK. W. Kreigh, Washington, D. C.; chief Tax Division; secretary committee on state and federal taxation, American Mining Congress.

Other speakers announced are: Dr. T. S. Adams, Yale University, formerly tax adviser, Treasury Department; C. P. Smith, Assistant Commissioner of Internal Revenue and member of the Tax Simplification Board; Albert H. Fay, Chief, Division of National Resources, Bureau of Internal Revenue; Walter R. Ingalls, consulting engineer, New York City; L. O. Evans, general counsel, Anaconda Copper Mining Co.; L. P. Barrett, mineral geologist, State of Michigan; H. B. Fernald, certified accountant, New York City; R. V. Norris, consulting engineer, Wilkes-Barre, Pa., and Howard N. Eavenson, consulting engineer, Pittsburgh, Pa., member, special committee on state taxation, American Mining Congress.

The standardization committee of the American Mining Congress will hold its third annual national standardization conference throughout the week, the general addresses being:

What Standardization Has Done for the Coal Mining Industry, by Colonel Warren H. Roberts, president Roberts & Schaefer Manufacturing Co.

The Purpose of Standardization in Mining, by Charles A. Mitke, consulting engineer, Bisbee, Ariz.

How Standardization Is Strengthening Our National Defense, by General J. H. Wainwright, Assistant Secretary of War.

Eliminating Waste in National Expenditures Through Standardization, by General Charles G. Dawes.

Co-ordination of Standardization Work for the Mining Industry, by E. A. Holbrook, dean of mining, Pennsylvania State College, State College, Pa.; formerly Assistant Director, U. S. Bureau of Mines.

National and International Progress of Standardization, by Dr. P. G. Agnew, secretary, American Engineering Standards Committee.

The following recommendations for standards in mining practice will be presented for discussion:

Drilling Machines and Drill Steel, by Norman Braly, general manager, North Butte Mining Co.

Underground Power Transmission and Power Equipment, by A. B. Kiser, electrical engineer, Pittsburgh Coal Co., and K. A. Pauly, General Electric Co.

Mining and Loading Equipment, by E. N. Zern, Keystone Consolidated Publishing Co.

Mine Timbers, by Gerald Sherman, consulting engineer, Phelps-Dodge Corporation, and R. L. Adams, chief engineer, Old Ben Coal Corporation.

Metal Mine Accounting, by T. O. McGrath, Shattuck-Arizona Mining Corporation.

Underground Transportation, by William B. Daly, general manager, Anaconda Copper Mining Co., and C. E. Watts, efficiency engineer, Berwind-White Coal Co.

Mine Ventilation, by Charles A. Mitke, consulting engineer, Bisbee, Ariz., and C. H. Trik, mine fan department, Jeffrey Manufacturing Co.

Milling and Smelting Practices, by Forest Rutherford, consulting engineer, New York City.

Outside Coal-Handling Equipment, by Dr. Henry Mace Payne, consulting engineer, New York City.

Fire-Fighting Equipment, by William Conibear, department of safety, Cleveland-Cliffs Iron Co.

Mine Drainage, by E. D. Knight, formerly engineer, power and electrical department, Cabin Creek Consolidated Coal Co., and William H. Gallagher, engineer Pickands Mather & Co.

Methods of Mine Sampling, by Philip Wilson, chief geologist, Calumet & Arizona Mining Co.

Steam-Shovel Equipment, by H. C. Goodrich, chief engineer, Utah Copper Co.

Mechanical Loading Underground, by Lucien Eaton, superintendent Cleveland-Cliffs Iron Co.

Standardization Day will be celebrated on Oct. 11. Other features will be papers on the relation of government to industry, on industrial co-operation, on the widening of the market for metals, also on co-operative combinations and possible modifications of the Sherman law to make possible greater economy in operation, with protection to the interests of the public. There also will be a national coal conference. The annual banquet will be held at the Hollenden Hotel on Friday, Oct. 13. A National Exposition of Mines and Mine Equipment, at which it is expected two hundred exhibitors will display their wares, will be held throughout the week in the Public Hall, where the convention will meet. The slogan of this Congress is "Greater Prosperity Through Lower Production Costs."

Big-Scale Operation Effects Economies at Columbine, Northern Colorado's Largest Lignite Mine

New Shaft Yields 1,800 Tons Daily and May Reach 3,000— Swift Work on Panels of Narrow Rooms and Wide Pillars Results in High Extraction Despite Quick Caves and Squeezes

BY CHARLES M. SCHLOSS* AND F. L. PEART†

YESTERDAY a barren hillside plot inhabited only by prairie dogs and chipmunks, today a prosperous mining community teeming with life and action—that is the story of Columbine, the newest, largest and best equipped mine in northern Colorado. It is the achievement of a man with a hobby. The man is George T. Peart, assistant general manager of the Rocky Mountain Fuel Co., and the hobby is—Columbine. Peart's imagination pictured it beforehand and his initiative carried the project from the nebulous paper state to its completion. Though an old-timer at this game of mining coal, he has young ideas, all embodied in this operation.

To reach Columbine one drives twenty-four miles due north from Denver. The railroad serving the property is a two-and-a-half-mile spur from the Chicago, Burlington & Quincy branch between Lafayette and Longmont. Erie is the nearest town, two miles west. Columbine is in the middle of the northern fields, equidistant from the Frederick-Dacona group and the mines at Lafayette and Louisville.

FIG. 2
Location of Mine
Columbine is 24 miles due north of Denver and located on an extensive tract of prairie.

An increasing demand for coal and the exhaustion in the near future of workable coal in some of the company's other mines made imperative the opening of a new property. Concentration of effort to reduce overhead dictated a magnitude of operation never before attempted in this particular field. The ownership of 960 acres of coal land near Erie, its accessibility to the market and the quality of the coal under those acres made the site chosen for the Columbine mine unquestionably the ideal spot.

The isolation of the place did not deter the company when once a decision was reached. A gang of laborers removed the first shovelfuls of dirt from the

NOTE—The headpiece shows the Columbine mine of the Rocky Mountain Fuel Co. with its headframe, tipple and power house.

*Lindroth & Shubart, consulting engineers, Denver, Col.

†Superintendent of the Columbine mine, Erie, Col.

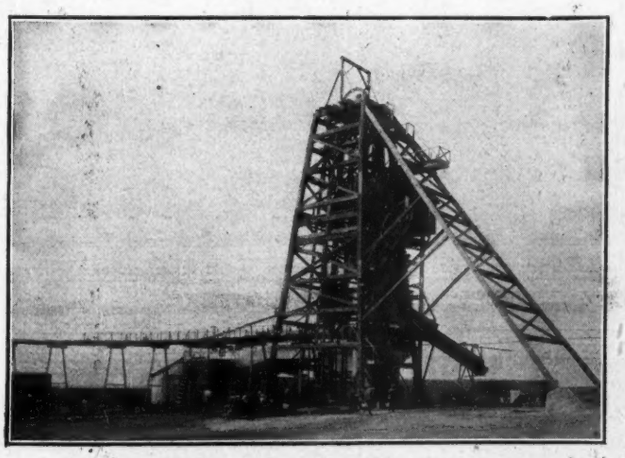


FIG. 1—ANOTHER VIEW OF TIPPLE AND HEADFRAME
The top works, like practically everything else at the mine, were designed and built by the mining company. The headframe is of the derrick type with the legs well spread at the bottom so as to relieve the shaft collar of all load.

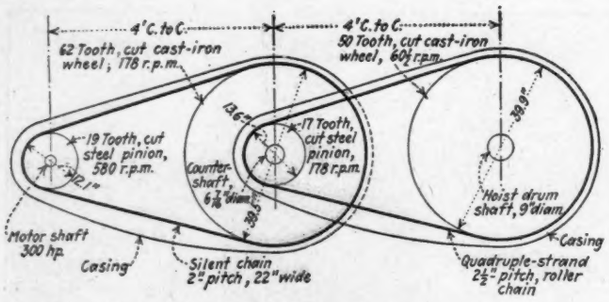


FIG. 3—DETAILS OF DRIVE OF COLUMBINE HOIST

The hoist turns once while the motor turns 9.6 times. The speed of the hoist is 60½ r.p.m. and that of the motor 580.

future shafts in the early summer of 1920. However, soon after the coal was reached it became evident that rapid development must be the order of the day. Since that time the output has been increased step by step until the beginning of the great strike, when Columbine really began hitting its stride of 1,800 tons per day. "Maximum capacity every day" has become the watchword to such an extent that two shifts are worked instead of one. It is confidently expected by the officials of the company that the opening of more territory and the operation of a larger number of loaders will soon bring the daily tonnage up to 3,000.

Though every effort is bent toward producing more coal, the building of the camp is being prosecuted with vigor and enthusiasm also. New houses are springing up, all supplied with cold water piped from an artesian well. An amusement hall is already functioning and a baseball club has been organized which on Independence Day crossed bats with the club from a neighboring community. The same day the company built a dancing floor and brought a high-priced jazz orchestra from Denver to furnish the music. "A good time was had by all."

In opening the mine a 9x18-ft. shaft was sunk 300 ft. to reach the thickest coal bed in the district—a seam that varies from 11 to 16 ft. A stratum of sandy shale tops it. Shale and fireclay constitute the bottom. An inch-thick parting of white rock characterizes the bed, ever present though varying in position from place to place. Little water is encountered. An approximate proximate analysis of the sub-bituminous coal reveals ash, 5 per cent; volatile matter, 34½ per cent; fixed carbon, 43½ per cent; moisture, 17 per cent; B.t.u. per pound, 10,000.

In the northern Colorado field pillar drawing in general has not been successful. It is the exception and not the rule, though in a few instances a large percentage of coal has been recovered. In some mines the practice of driving wide rooms with narrow pillars between is still prevalent. Rooms are completed as soon as possible, and all the pillar coal that can be taken is recovered before the inevitable floor squeezes or roof falls occur or before the pillars are crushed by the overlying strata. About 50 per cent of the available pillar coal is extracted.

Quick Work Alone Will Assure High Recovery

Natural conditions are largely the cause of these losses. The overburden lies on the coal like a dead weight. The minute a place is cut, the coal settles. The narrow kerf cut by a chain machine is not spacious enough to prevent the pinching of the cutter bar, which, in consequence, has frequently to be dug out. In addition the bottom is soft and when the room coal is taken out the additional burden on the narrow pillars brings such pressure on the soft bottom that it can no longer resist and up it comes to the roof.

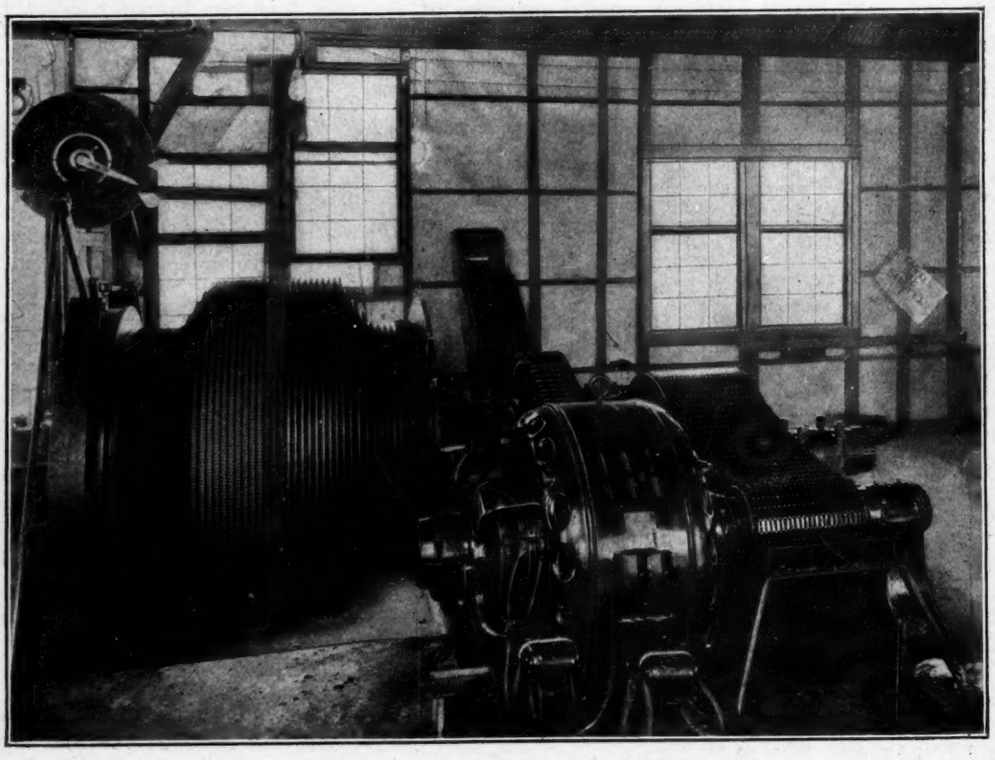
The operators of the Columbine mine are trying to overcome these obstacles. Assistant General Manager Peart says of his method:

"Frankly we are experimenting. A panel system is being used, six narrow rooms being turned on each side

FIG. 4

Electric Hoist

A 5 x 7-ft. cylindro-conical drum hoists the coal up the shaft, the depth being only 300 ft. The hoist is driven by a 300-hp. 440-volt induction motor. Its full capacity as yet has not been reached, the production up to the present not exceeding 1,800 tons a day. Power is transmitted through a double reduction of silent- and roller-chain belts. To show these the covers by which they are housed have been removed.



of the panel entries and on 70-ft. centers. The rooms on each side are driven up concurrently as rapidly as possible, 8 to 10 ft. of coal being taken and the remainder left for a top. Pillar drawing is begun as soon as the maximum room length is reached, the top coal coming down at the same time chain machines undercut the coal. The pillars in each room are attacked simultaneously, keeping their faces in line. By rapidly prosecuting this work the pillars are pulled before squeezes become dangerous. No coal has been lost so far, and we are sanguine that the scheme will be successful."

Illinois operators who are constantly harassed by the fear of surface subsidence would consider this "the promised land." The company owns half of the surface but that and the other half are so nearly valueless that subsidence means nothing at Columbine.

Auxiliary Airways Provide Against Accident

Reference to the mine plan will show that the arteries of the ventilation system are the triple entries which provide large air passages and consequently reduce the power required to keep the air moving, and also, and this is not less important, furnish auxiliary airways in case of accidental squeezes, falls of roof or fires. Naturally the same provisions augment the haulage facilities. A Sirocco fan 60 in. in diameter and with a 40-in. face blows 75,000 cu.ft. per minute down the airshaft. An 11-ft. Jeffrey disk fan is installed close by as an emergency unit. At the foot of the downcast the air is split three ways; thus as far as ventilation is concerned there are three separate and distinct mines, any one or any two of which can be operated in case of accident to the other one or two.

The availability of electric power from the Western Light & Power steam plant near Lafayette makes generation at the mine both unnecessary and uneconomical. Transformers just outside the hoist house step the high potential current from 2,300 volts to 440 for use by the two 250-volt motor-generator sets. The cutting machines and the locomotives, of course, use this direct current. Because of the short distance of the workings from the shaft bottom the voltage is good, even though the generators are above ground.

If variety is the spice of life, then as far as machines

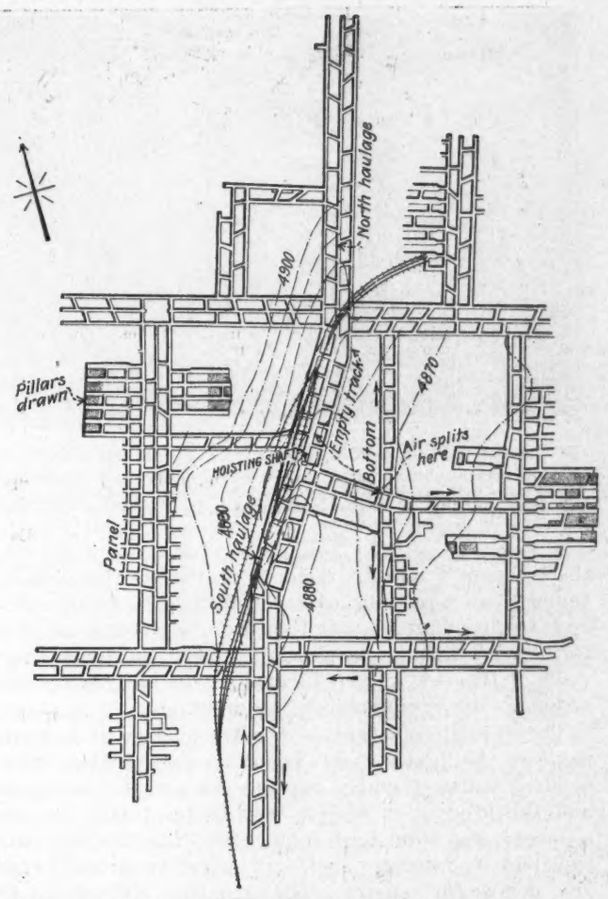


FIG. 6—MINE PLANNED FOR RAPID PILLAR REMOVAL

Much entry has been driven but few pillars have as yet been drawn. Success in pillar work therefore has not yet been proved. The bottom is soft and the coal none too strong.

are concerned Columbine is spicy, for a variety of types are in daily use. The initial purchase was a Goodman shortwall of the standard type. Soon after its installation the Oldroyd made its début at a neighboring mine. The idea of shearing the coal besides undercutting it appealed to Columbine engineers and four Oldroyds were purchased. The Goodman was sent to another of

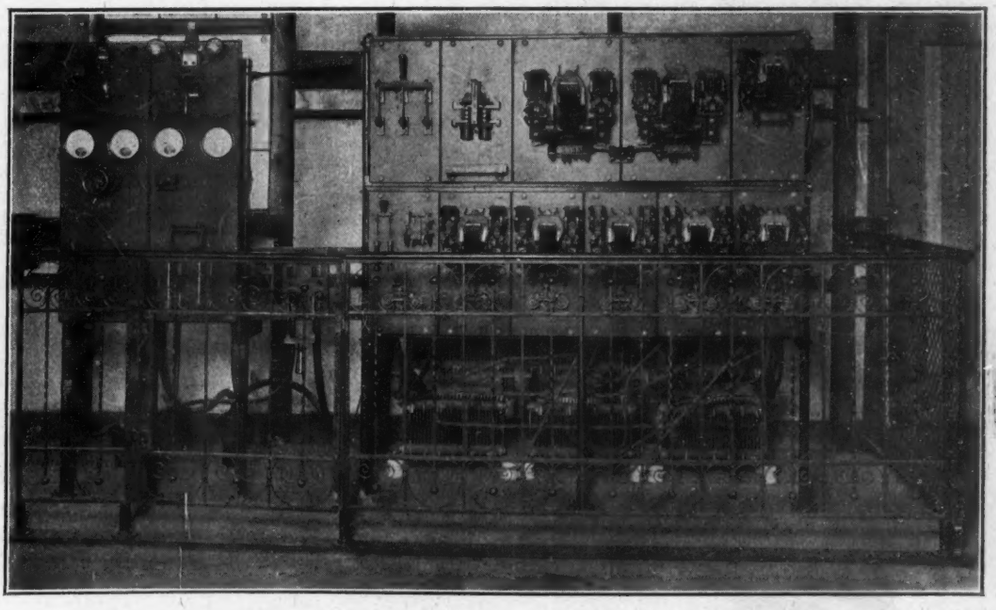


FIG. 5

Switchboard

This master-controller and magnetic-contactor switchboard provides for the automatic acceleration of the hoist motor, the maximum speed of the cage being 1,400 ft. per minute. A 440-volt variable-speed induction motor drives the hoist.

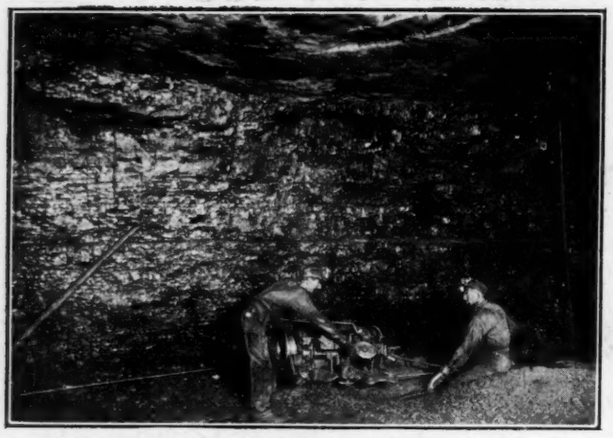


FIG. 7—SHORTWALL MACHINES CUT SOME OF THE COAL

A universal control cutter is shown at work at a room face. All pillars in this mine are drawn by this type of machine. Note the 1-in. parting of white rock which characterizes the seam mined at the Columbine mine.

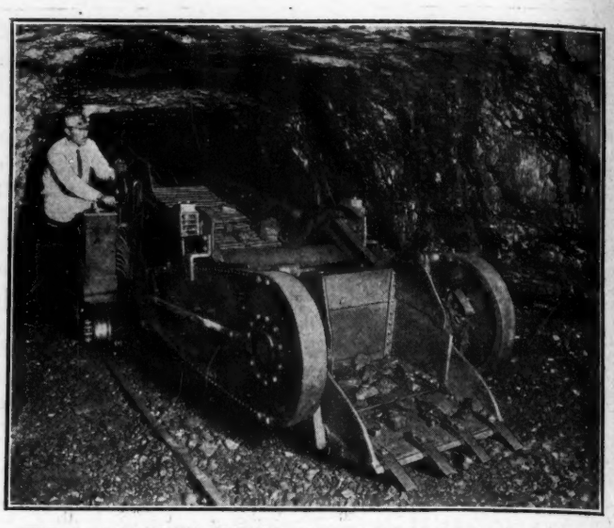


FIG. 9—LOADERS WHICH ADD TO PRODUCTION SPEED

One operative, one man at the face and two car droppers can clean up two or three entries and load up as much as 100 tons per shift. It has been found difficult to deliver cars nearly fast enough to develop the full capacity of the shovel. This handicap, it is hoped, will be overcome later.

the company's mines. After a year's use the company found the repair bills of the Oldroyds large though it was freely admitted that they were eminently satisfactory in most other particulars. Four Goodman shortwalls of the new universal-control type have lately been added to the equipment of the mine.

The shearing feature of the Oldroyd is of immense value in the lignite coal. The extra loose end on which to shoot unquestionably permits the use of less powder and the production of not only larger lumps but also a larger percentage of lump; but this has not been sufficient to overcome the high upkeep costs and expensive delays for repairs. The shortwall will cut on the bottom but this larger machine can cut no lower than the top of the rail, with a resulting bench of coal which must be picked up or shot up at an additional cost. This cost, however, does not assume large proportions when the coal separates easily from the bottom.

Besides these two types, a Jeffrey arcwall, idle at another property, was brought here and has given a good account of itself. Each machine has a territory to itself and does all the cutting in that territory. Only the shortwalls are used for pillar drawing.

In the initial stages of the mine, when it was decided to rush development, two Myers-Whaley shovels were placed in service in entry driving. These have done and are still doing good work. With a crew of four men—one operator, one man at the face and two car droppers—as much as 100 tons has been loaded and two or three entries cleaned up per shift. The output of the machine is limited by nothing inherent in the machine itself but only by the delay incident to keeping empty cars ready for it to load.

All gathering is done by ten mules—the work is not concentrated enough to justify the installation of gathering locomotives just yet; however, they are a future probability. Main haulage from partings to shaft bottom is accomplished by one four-ton and two six-ton trolley locomotives. One or two of these will be superseded by a 13-ton machine just ordered. The heavy grades down which the locomotives must retard the trips make this heavy weight necessary. At the shaft bottom mechanical brawn in the shape of Nolan automatic cagers supplant human labor in feeding loads onto the cages. The crew on the load side of the bot-

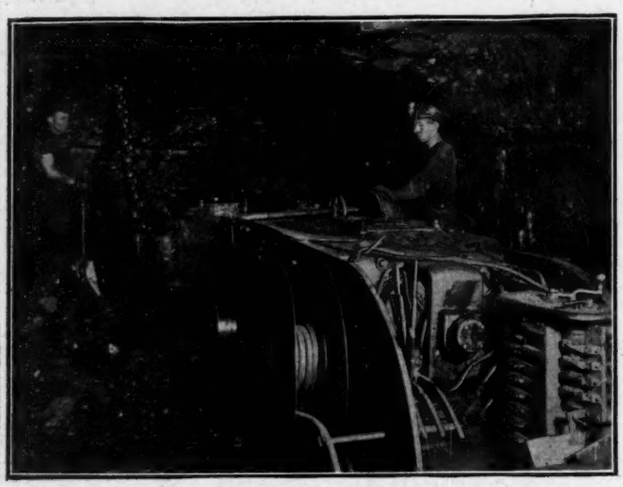


FIG. 8—SHEARING THE COAL FACE WITH OLDROYD

These machines by their rapid cutting and extreme flexibility have performed valuable service, though repair costs have been somewhat too high. Experience in this mine may bring about many improvements.

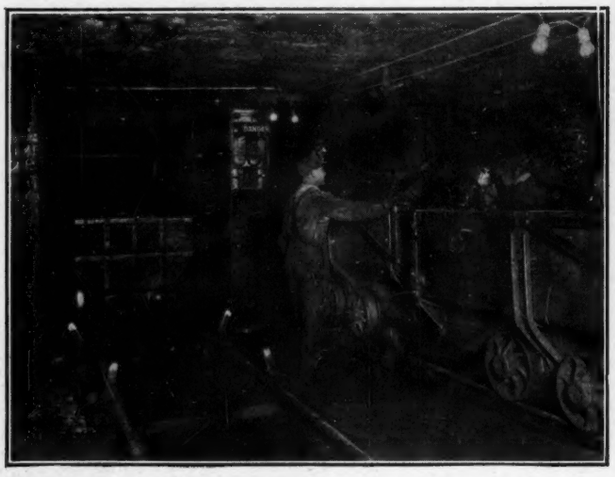


FIG. 10—AUTOMATIC CAGERS EASE LABOR AT BOTTOM

Two men with the aid of an automatic cager deliver all loads to the hoist. Empties, pushed off the cages, run by gravity to a car haul which raises them high enough to "kick back" to the empty track, where a third man couples them.

FIG. 11—A VIEW OF COLUMBINE CONTIGUOUS TO THAT OF THE HEADPIECE

A model village planted incongruously in the midst of a vast gopher- and rattlesnake-infested prairie, within sight of the Rockies. This mine, which has broken many precedents, East and West, is being closely watched, as it is believed that many methods worthy of adoption have been inaugurated.

tom consists of only two men and the cager. Empties pushed off the cages roll by gravity to a car haul which raises them high enough for them to "kick back" to the make-up track for the empty trip, where another man couples them together.

The Columbine hoist is a Denver-made Dewco, using a cylindro-conical drum 5 ft. in diameter at the small ends and 7 ft. at the center; its maximum hoisting speed is 1,400 ft. per minute. A 300-hp. 440-volt variable-speed Ideal induction motor supplies power to the drum through the medium of a double-reduction of Link-Belt silent and roller chains, all running in dust-proof and oil-retaining casings. A short countershaft supported by two bearings is driven from the motor by the silent chain and in turn drives the drum by a quadruple-strength roller chain, four heavy single-strands built integral. The layout is shown in photographic and diagrammatic form accompanying this article. A Cutler-Hammer master controller and magnetic contactor panel provide automatic acceleration for the motor.

The Columbine tipple, as well as the bath house, club house and all other buildings, was designed and erected by the company. The tipple machinery itself was made by them according to their own details and specifications, much of the material coming from other properties of the company. The screen is unusual in that it is supported on flexible boards and in that its perforations are all square instead of round or slotted. Furthermore, its speed is higher than is commonly found—130 vibrations per minute. The company has found from experience, however, that Columbine sub-

FIG. 12—AN UNUSUAL WAY OF LOADING COAL

Frequently coal is loaded so that the larger coal is at the top, so as to put, as it were, "the best foot foremost." But sub-bituminous lumps slack so readily that it is well to cover them up with the finer coal. For this reason the coal is dumped so that the lumps seek always the bottom of the pile and the slack remains in full view.

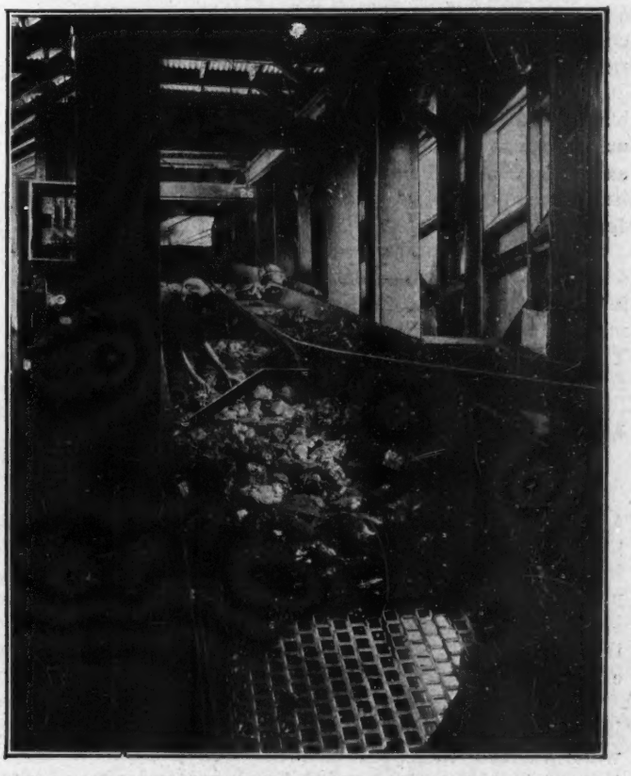


FIG. 13—SHAKER SCREEN DESIGNED BY COAL COMPANY

Sub-bituminous coal, the coal company believes, can best be sized by a short, quick vibration; so this screen, suspended by pairs of 1x12 in. boards, makes 130 strokes per minute. Three sizes are ordinarily made, but other square-hole plates are always ready to prepare additional sizes so that any ordinary market demand may be met.

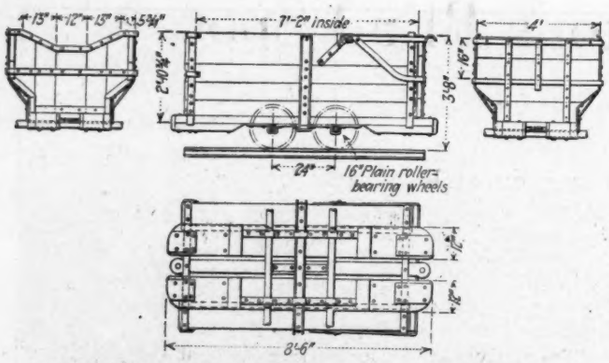


FIG. 11—WOOD CAR WITH END GATE IS USED
As the seam is thick and the coal is to be loaded by machine the car is constructed relatively high—3 ft. 8 in. clear of the rail. The rear, however, is dropped at the center about 6 in., so the shoveling height with end loading will be only 3 ft. 2 in.

bituminous coal can be screened most effectively by such equipment.

Coal people of the state are watching Columbine with unveiled interest, not because it is as yet a large producer but because it is a new property, where modern machinery and modern methods are being employed and one that is considered to have a brilliant industrial future.

Testing Contact of Knife-Switch Blades*

By J. P. Burns
St. Louis, Mo.

IT IS important, especially in the case of big switches, that the blades make good contact with the jaws, for if they do not the switch will heat. It is sometimes difficult to determine whether the blade does or does not make a good fit if one does not know just how to go about it. The following suggestions therefore may simplify the matter:

A "feeler" can be used for finding when knife-switch blades make good contacts in the jaws. Any thin, hard material may be used for this purpose. A piece of mica, say ⅜ in. wide and 2 in. long, is satisfactory, or a very thin piece of sheet steel will answer the purpose. The feeler should be about 0.003 in. thick.

To use this tool, try to insert it between the jaws and the blades at different points. At locations where it can be pushed in readily the contact is poor. This may be corrected by light hammer blows on the jaws. The blades should always be "ground in" to insure good contact between them and the break jaws.

Measures for Prevention of Ignition of Gas By Electric Detonators

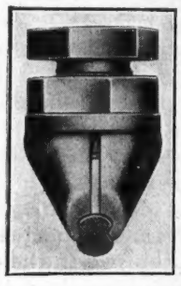
SEVERAL ignitions of gas and at least one mine fire having been attributed to heated leg wires of electric detonators at mines in which outside firing was practiced, certain tests were conducted by the U. S. Bureau of Mines to determine, if possible, the cause of these ignitions. The results are set forth in reports of the Bureau Serial No. 2383.

Three series of trials were made, as follows: Tests in air to show the behavior of iron and copper leg wires when various values of current were passed through them, tests in mixtures of natural gas and air to determine the length of time required for various currents when passed through iron and copper leg wires to cause an explosion, and tests to determine the possibility of gas ignition from the re-establishment of the circuit after firing of the detonator.

As a result of this investigation the following preventive measures are suggested: (1) Detonators should be connected in parallel-series, series-parallel or in straight series. (2) The time during which the firing connection is made should be limited to 0.15 to 0.2 second. (3) Electric detonators with copper leg wires should be used. (4) A firing supply current having the lowest standard voltage that will fire all the detonators connected should be used. (5) An ungrounded firing circuit should be employed.

Trolley Clamp Needs but Two-Inch Headway

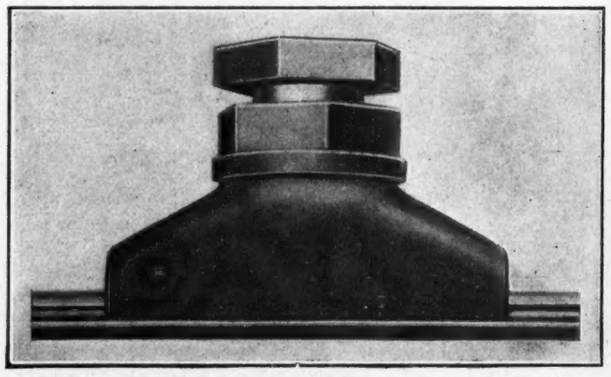
THE mines of the country always have been desirous of obtaining a trolley clamp that would take up the minimum headroom. To meet this demand the device shown in the accompanying illustration has been developed. This trolley ear, which is extremely simple in design, possesses certain improvements over its predecessors. It is composed of only four parts, namely, a machined steel center, two malleable-iron jaws and a locking nut. All of these are permanently assembled and sherardized.



FOUR PARTS ONLY IN TROLLEY CLAMP
A machined steel center, two malleable-iron jaws and locking nut which is sheradized after assembling.

The total height of the assembly is only 2 in., yet a positive grip on the wire is provided and the ear offers the least possible obstruction to the trolley wheel. In installation the upper hexagon nut is screwed up tightly against the suspension, after which the jaws are aligned with the trolley wire and locked in position by means of the lower hexagon nut. This is fitted with a left-hand thread, and the entire assembly is readily brought up tight and snug.

This new clamp is designed in two styles, one for 2/0, 3/0 or 4/0 grooved trolley wire, and the other for 2/0, 3/0 or 4/0 figure-eight wire. Consequently in mines where either grooved or figure-eight wire is standard, one style or two styles at the very outside need be stocked. This device is being manufactured and placed on the market by the Electric Service Supplies Co., of Philadelphia, Pa. Its great simplicity and small headroom will recommend it to the consideration of operators.



SIDE VIEW
Suspension does not obstruct trolley wheel.

The Coal Operator's Blind Spot

Fails to See Duty to General Public—Rights of Individual Must Yield to Public Necessity—Can Simplify Problems by Improving Reputation

By George Otis Smith
Director U. S. Geological Survey

SIX years ago, at a meeting of the American Mining Congress, the present editor of *Coal Age* and I began a discussion of the cost of coal with the obvious premise that "the price of coal is a matter of vital concern to the average citizen." Since that time more than 3½ billion tons of coal has gone up in smoke here in the United States, and the price of coal has repeatedly become a national issue. Yet in these same six years, I fear, we have not been willing learners from experience; the consumer still fails to assume any responsibility in bettering the conditions of coal distribution, the public official still fails to distinguish between the essential and unessential in governmental "interference" with the coal business, and both the coal operator and the mine worker still utterly fail to appreciate that society is larger than any business and that the common weal is superior to any private privilege.

Were I writing for other columns I might well discuss another phase of the subject and appeal to coal consumers for help in reducing the burdens of those who mine and sell coal. The readers of *Coal Age*, however, are at the opposite end of the business, and I shall therefore better achieve my purpose by describing what I may perhaps be allowed to term the blind spot of the coal producer. It would be unfair to charge the leaders in any American industry with utter lack of vision, for we Americans like to consider ourselves forward-looking, yet the recollection of recent events forces me to the conclusion that far too many bituminous coal operators, however wide their angle of vision, have been blind in one particular—they have failed to see their duty to the general public; and, moreover, those leaders who at times have urged the recognition of the public interest have not had the following they deserved.

The Blinding Effect of Coal Dust

Possibly the miner, the operator, and the dealer are all too near to coal to see it in its larger aspects—the coal dust blinds their eyes to the truly beneficent part that coal plays in this world of ours. It is not merely a figure of speech but an evident fact that our social and industrial structure is built on a coal foundation. The labor leaders and the big operators realize this fact to the extent that it is the major premise in all their strategy, but neither the union executive nor the operators' spokesman appears to appreciate the full social value of coal or see that a strike or lockout at the coal mines can bring unmeasured distress to millions of fellow-citizens, and that even the partial stoppage of the country's fuel supply for five months threatened widespread disaster all out of proportion to the wrongs that the disputants were trying to right. It is because he sees clearly the dangers of industrial paralysis that Governor Miller recently characterized as tyranny "the effort of any group of men to control on a nation-wide scale the production of any essential article," and he applied to employers as well as to employees this rule of conduct: "When public necessity intervenes, the right of the individual to do as he will must yield." All this is simply a fresh expression of the democratic principle of the rule of the majority, and as applied to coal it simply means that consumers outrank producers 100 to 1.

The lack of functioning in the coal operator's blind spot is evident from the unfortunate fact that in failing to see beyond the few score or few hundred stockholder-owners of the mine he skillfully manages, or even the 500 mineworkers he employs, he fails to realize that nearly 100,000 of his fellow citizens are dependent upon the product of his mine. In these days "dependent" is not too strong a term, for coal enters into every industry and forms an essential part of every commodity; the importance of coal even on the farm was brought to mind last summer, when a priority was requested for coal to run the threshers whose uninterrupted operation was essential to the saving of the world's bread. It is not simply the steel works and the automobile plant and the gas works that are dependent upon a supply of coal, but every industry, large or small, in which mechanical power strengthens the arm of the workman and increases his ability to produce what his fellow men eat, or wear, or use in any way. The world lives on coal.

Property for Use vs. Property for Power

So it is that the distinction emphasized by an English professor between property "for use" and property "for power" may well be applied to the coal mine. The owner of coal in the ground has no inherent property right based on anything else than the use of that coal, and any neglect of the consumer's right to have that coal as he needs it only incites such suggestive references to a bygone feudal system as are contained in the obnoxious term "robber barron." That idea of property as a source of benefit to the owner alone is centuries out of date here in the United States. The contention of a coal-mine owner that the only point of contact between his private property and the Constitution is the constitutional guarantee of protection is based upon a mistaken idea that coal is the only private property to be considered. Such an advocate of the constitutional rights of the coal operator is himself blind to the obvious existence of other citizens whose property rights and indeed whose health and happiness are dependent upon a supply of coal. It is this social value of coal *for use* that gives the operator and the mine worker their opportunity for profit and earnings, but even that ever-present friend in time of exigency, the Constitution, can hardly be summoned to destroy or injure the property rights of the majority in order to protect a monopolistic property right of the minority.

It was a representative coal man speaking to coal men who named the problems they continually face—

an unfriendly press, a distrustful public, and the threat of socialistic legislation. This statement certainly suggests a burden from which the coal operator must seek relief—a situation that calls for action. Whether he attributes this unhappy condition to prejudice or suspects that it is founded on unwise practices, the coal operator, as well as the coal merchant, as a matter of good business, must seek to better his reputation. Periodically, those who are engaged in the coal trade realize all this, but between the periods they forget it, and I fear that the fairer reputation will not be won for the coal business until there comes into the whole industry, from the mine room to the consumer's bin, a year-in and year-out sense of the great public service to be rendered by those who mine, transport, and deliver coal. It is not enough for a few to realize this; the great majority of mine workers, operators and dealers must fully realize their relation to the public.

It may be that the case of the coal operators has sometimes been presented so plausibly that they themselves have come to believe it to be stronger than it really is. As an example of too many lawyers on the job, I can cite some long-continued hearings before Congressional committees, where among the array of able attorneys none won the confidence of the committee members and promoted the passage of the relief legislation so effectively as a certain oil operator who made little claim to his rights but candidly told all the facts —so candidly that he was at the time accused by his associates of "spilling the beans." But his frank presentation of the facts, regardless of whether or not they favored his case, saved the day, and it is interesting to note that, so far as the presidency of a national organization signifies primacy, he is today the leader of the oil industry. Might not the coal industry profit by similar tactics?

In the six years since Mr. Lesher and I first wrote on the cost of coal I have more and more regretted the lack of the facts that are needed to clarify the issues raised by widespread criticism, and more and more do I believe that those facts, when found, will help the coal industry as a whole—not hurt it. My own view of the coal business in its relation to the public is that what will help the consumer will help the producer—that the true interests of operator, miner, and general public are not antagonistic. The respective equities cannot be determined, however, under any policy of withholding facts or of conducting the industry's case before the public by claiming everything and admitting nothing. The "strong front" presented by the attorneys for the coal operators—their uncompromising denunciation of others, their vehement claim of rights above those of the public—has had the temporary effect of shaking somewhat my faith in the integrity and good-will of the industry. The spokesmen of the coal operators have overplayed their hand.

The opportunity is now here to reverse that policy and to join in whole-hearted co-operation with a public agency whose purpose is to find facts and present them for public consideration. The United States Coal Commission has been authorized by Congress to study the whole subject for the sole purpose of advising Congress. The end in view is an adequate supply of coal for industrial and domestic use and the maintenance of uninterrupted commerce between the states. No one can render greater assistance in that study than the coal operator, and no one will receive greater benefit from a wise solution of this urgent problem.

I offer the opinion that the coal operator has too long been blind to his own interests in not seeing clearly his large and peculiar function in the service of the public. The failure of the industry as a whole to obtain a fair deal has been due in part to this blindness and to the unfair practices of the few. The facts may injure this minority, but in the long run they will help the fair-minded and fair-acting operators, who, I like to believe, from personal observation, constitute the large majority.

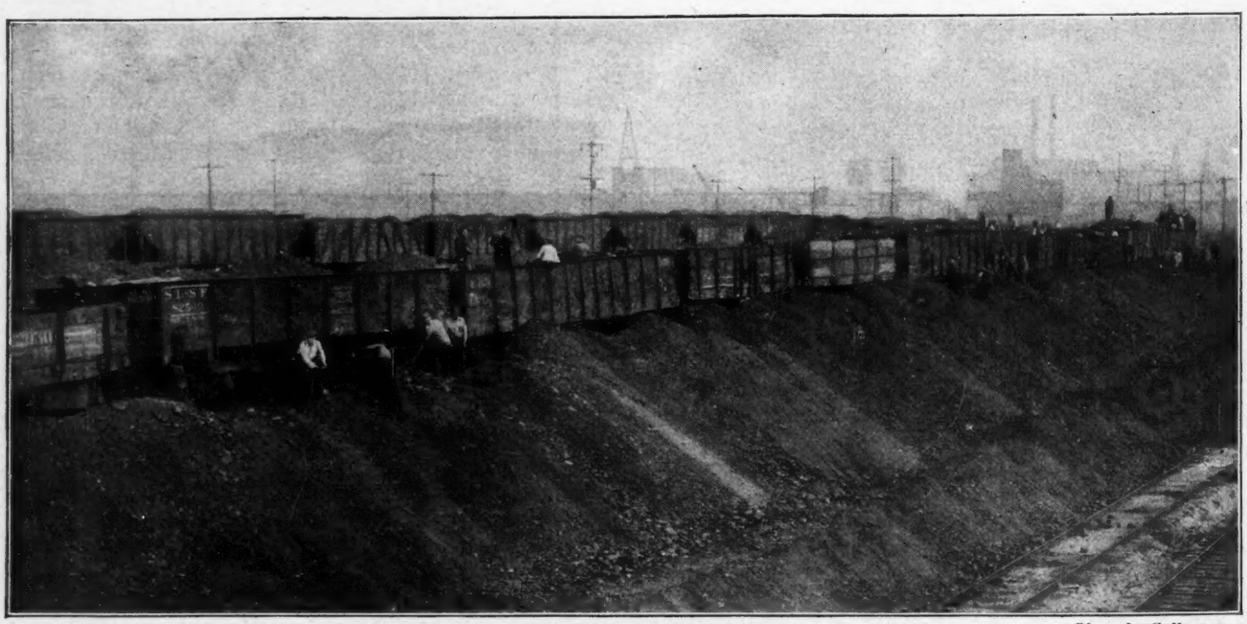


Photo by Galloway.

COAL STORAGE PILES AT EDGEWATER, N. J.

Two hundred and forty thousand tons in the storage yards of the New York Edison Co. waiting to be transferred to barges for use in the 39th Street power house across the river in New York City. The New York Edison Co. furnishes 80 per cent of the electricity in Greater New York. This picture was taken some time ago but the New York Edison Co. is still well supplied.

Hoists That Accelerate, Slow Themselves Down or Work Unattended and Substations Needing No Attendant*

Nokomis Hoist with Different Speeds for Coal, Supplies and Men, Speeds Up, Reduces Speed and Stops Automatically—Two Inspiration Hoists Work Continuously with Man to Oil and Watch

BY C. E. H. VON SOTHEN†
Schenectady, N. Y.

WHEN weighing ways and means for decreasing the operating expenses of a coal mine, two classes of apparatus should be given careful consideration. These are the automatic mine hoist and the automatic substation.

In many large mine hoists today some features have been made automatic in operation, particularly those devices intended for protection against overwinding, and in some electric machines devices for preventing excessive acceleration or retardation have been added. Thus a 1,350-hp. hoist of the Valier Coal Co. at Valier, Ill., is arranged for automatic acceleration, automatic slow down and stop. It is necessary only for the operator to close the control switch in order to start the hoisting cycle. A pilot motor then turns the controller to the full-speed position, whereupon this motor is cut off and unclutched. Near the end of the travel of the hoist cams turn the controller to the off position, and when this is reached the brakes are automatically applied.

Another hoist of this type is the 1,050-hp. machine of the Peabody Coal Co. installed at Nokomis, Ill. This hoist is provided with cams so arranged that the operator may obtain three definite speeds for hoisting—for coal, for men and for material. Automatic retardation and stop are provided at each speed. These hoists, of course, require the presence of an operator on the platform at all times. The automatic features simply permit higher hoisting speeds and more rapid retardation than could be obtained normally with manual control.

There are some large hoists in operation, however, that are completely automatic—that is, capable of performing their functions without an operator being present at the control levers. Where the rope speed is low, no slow down is required before the skip or cage enters the dump. In such cases a direct-current shunt motor or an induction motor may be employed. For speeds above 400 ft. per minute it is necessary to retard before entering the dumping apparatus. A reasonably accurate stop also is required for reliable operation. It is nearly always imperative, furthermore, that the automatic-control system act in the same manner irrespective of the load—that is, that the rate of retardation and the position of stop be nearly the same whether the skip comes up loaded or empty.

The direct-current shunt-wound motor with voltage

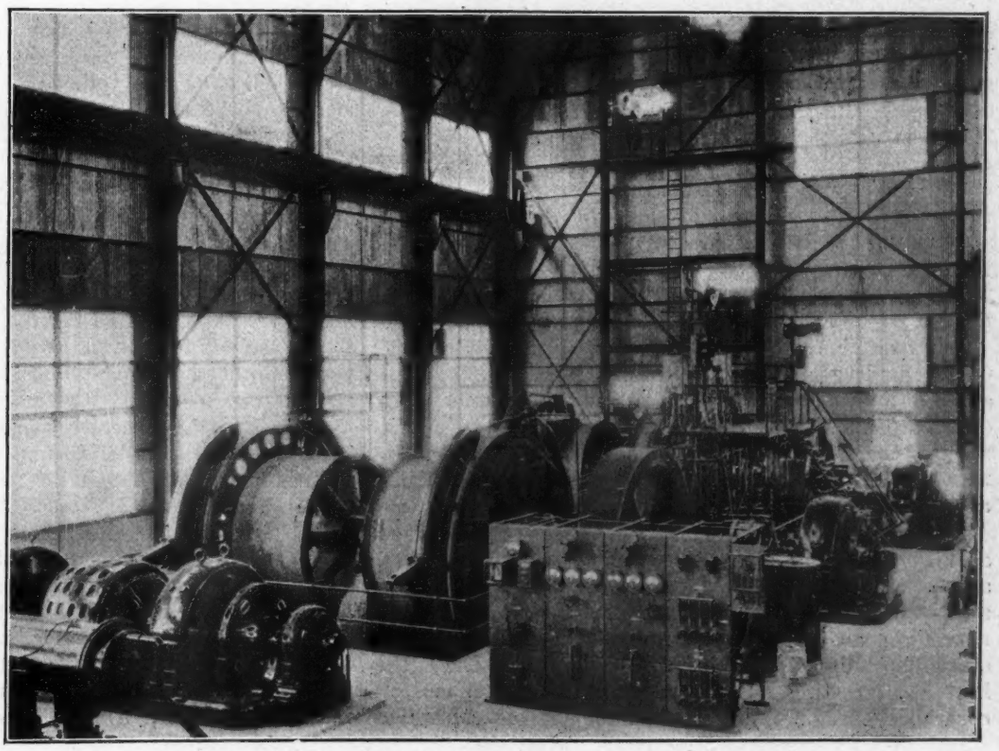
*Article entitled "Automatic Electric Apparatus Applied to Coal Mining" read before the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, at Huntington, W. Va., Sept. 22.

†Power and mining engineering department, General Electric Co.

FIG. 1

Inspiration Hoists

Main hoists at plant of Inspiration Consolidated Copper Co., Inspiration, Ariz. These hoists, though provided with manual control down to the very point of installing controlling levers whereby the hoists can be manually regulated, are arranged to be self-controlled. The skips go up and down in the shaft without any engineer. Not even a pushbutton is used to set the skips going from morning start till "all-hands home." The hoisting distance from loading point to chairs at the loading pockets is 630 ft. and the rope speed is approximately 750 ft. a minute.



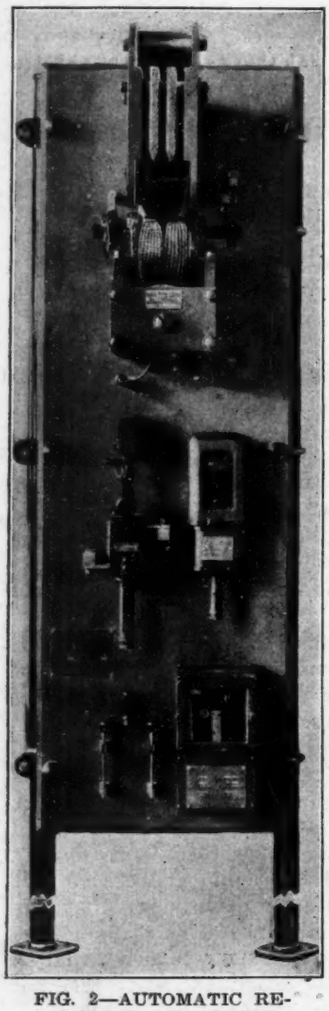


FIG. 2—AUTOMATIC RECLOSING EQUIPMENT

For feeding a stub-end with direct current.

control is the only type inherently suitable for automatic hoisting at high speed. This system of control has such characteristics that if the controller is moved back at a certain rate the hoist will be retarded at a proportionate rate and to nearly the same speed irrespective of the load being hoisted.

When the officials of the Inspiration Consolidated Copper Co. planned the layout of their main shaft several concurrent conditions indicated the possibility of effecting appreciable savings in hoisting by the use of automatic hoists. Two three-compartment vertical shafts were sunk for two independent balanced hoists, either of which can in an emergency keep the upper works running at full capacity. The third compartment of one shaft contains a double-deck man cage and the third compartment of the other carries a counterweight for this cage together with air lines, electric cables and the like.

The hoists proper were built by the Nordberg Manufacturing Co., and the electrical equipment was furnished by the General Electric Co. Fig. 1 gives a general view of the two machines and the electrical equipment. Each hoist is driven by a 580-hp. 575-volt 264-r.p.m. shunt-wound motor through a flexible coupling and Falk gears. Power is supplied to the hoist motors by a flywheel motor-generator set. This consists of one 850-hp. induction motor, two 500-kw. generators and one 20-kw. exciter, also a 19,700-lb. 112-in. steel-plate flywheel. Each hoist motor is connected separately to one of the generators and is controlled by varying the generator field.

From the dumping point to the chairs at the loading pockets underground is 630 ft. in each shaft. The rope speed is approximately 750 ft. per minute. A manway connects the two shafts, which are about 125 ft. apart, so that the same attendant without difficulty can take the entire care of the automatic weighing and loading apparaus of both the hoists.

To introduce automatic control at the beginning of a shift the operator closes two small control switches and locks in two levers. To start automatic operation a master controller is then thrown to the automatic running position. One hoist or the other will then start, depending upon the positions in which the skips have been resting. Suppose that closing the master controller energizes the pilot motor on the controller of No. 1 hoist, which starts, lifting its south skip; then as No. 1 controller moves away from the off position it simultaneously energizes No. 1 generator field and operates a pilot device which releases the brakes on the No. 1 hoist. This machine is accelerated by the controller building up the generator voltage.

Toward the end of skip travel the movement of No. 1 hoist actuates a pilot motor which moves the No. 2 hoist control gradually to the full-speed position in one direction, thereby accelerating No. 2 hoist to lift its north skip. Shortly before this skip enters the dumping horns the travel of No. 1 hoist, by means of cams, one of which is geared to each drum, gradually moves the No. 1 controller toward the off position. This decreases No. 1 generator voltage, thereby retarding the No. 1 hoist. Just as the north skip is about to land on the chairs No. 1 controller comes into the off position. This completes retardation and automatically applies the brakes. No. 1 hoist remains at rest while No. 2 is raising its north skip. In like manner No. 1 then hoists its north skip and then No. 2 its south skip. This sequence continues until it is interrupted or stopped by the operator.

In order that the transition from hand to automatic control and vice versa may be effected easily and quickly the levers on the operating platform are not disconnected from their controllers or brake engines when running automatically. During automatic operation, therefore, these levers move back and forth as if manually operated and are always in the correct position and in proper engagement for hand control.

Under all conditions, except when making adjustments, the cams for effecting automatic retardation and stop remain mechanically fastened to the hoist drum. Limit and emergency switches also are provided.

Empty or Full, Skip Arrived Safely at Top

After installation these hoists were started without difficulty, and on the second morning hoisted forty-four skips. After a few weeks of operation observations were made on the accuracy of stop. In twenty consecutive trips (ten each way) the total variation between maximum and minimum was only 1½ in. of rope travel. During this time the ore "hung back" in the loading pockets on one side, so that six of the trips included in the above figures were made with an empty skip.

To operate two hand-controlled hoists, either steam or electric, of the size of those here described would require at least two operators per shift. Following the practice found in some localities an oiler also would be employed. For the functioning of the automatic hoist only one operator is required and he is able to attend to all the oiling as well as whatever hand manipulation of either hoist may be necessary on his shift. The saving thus attained is readily apparent.

Taking up the second type of equipment mentioned in this article, in order to understand thoroughly what is meant by an automatic substation the following definition may be submitted: An automatic substation is one which at the indication of a master circuit goes into operation through automatic sequence, maintains by automatic means the required character of service, shuts down and clears itself automatically at the opposite indication of the master circuit and protects itself while starting, running and shutting down. The master element may be a contact-making voltmeter, a contact-making ammeter, a remote-control switch, a time

switch, or the station may be started and stopped by switching the alternating-current supply.

For mining service it is usually recommended that the station be started by some means other than a contact-making ammeter or voltmeter and that it run continuously until shut down by the opening of the master element. The reason for this will be apparent when the character of the load supplied is considered in connection with the low cost of electrical energy per ton of coal mined. The peak of a mining load develops so suddenly that a machine usually is unable to get on to the line soon enough after being started on load demand to be of any assistance. This together with the fact that the cost of electrical energy usually is not more than a few per cent of the value of the coal loaded for shipment makes it desirable to operate the station continuously during the hours when power may be needed suddenly. In certain mining installations, however, such as the double-unit synchronous motor-generator equipment of the Star Coal & Coke Co., the starting by load demand of the second set is now being used to great advantage.

That the advantages of automatic operation are being investigated and appreciated by the mining industry is well demonstrated by the remarkable increase in the use of the automatic substation within the past year. Both motor generators and synchronous converters are being automatically controlled with complete success, and it is only fair to assume that the practice will rapidly gain in favor as those engaged in the coal industry become more familiar with the advantages to be gained.

In the past, when labor costs were much lower than they are at present, it was possible to place the substations at or near the working faces and have each cared for by an operator or at least by a man who had little else to do. The time has now been reached, however, when this is uneconomical, yet grouping the substations so that one man can attend to several does not solve the difficulty because of the excessive amount of feeder copper that is required.

Mechanism Proves the Better Attendant

Not only this, but it is evident that the quality of service afforded by several substations cared for by one man cannot possibly equal that of a station in charge of an attendant whose sole duty is that of caring for that particular station. Making substations automatic permits their location near the working faces, thus avoiding long runs of feeder copper and simultaneously saving the wages of one or more operators. The reduction in the quantity of feeder copper necessary often amounts to enough to cover the extra investment entailed in making the station automatic, leaving the operator's wages as a net saving.

The automatic synchronous converter substation of the Lehigh Valley Coal Co. at Drifton, Pa., is located on the surface about 3,000 ft. from the nearest point where an engineer could be found during each hour of the day. This location was chosen in order to place the station at the approximate load center. During last winter this station was snowed under to such an extent that it could not be reached for five days. Throughout this period, however, the service rendered was entirely satisfactory.

It has been found that the quality of service afforded by the automatic substation is superior to that rendered by the ordinary manually operated station and is at least equal to the best. The number and length of interruptions to service ordinarily dependent upon an operator for correction are reduced, as already has been stated, and the voltage regulation is improved without excessive installation of feeder lines and without the addition of any attendants. With better voltage regulation all operations in the mine are speeded up, which in itself is of economic value. Wear and tear on substation apparatus is reduced through the elimination of unskillful handling.

When several manually operated substations feed into the same direct-current trolley system the loads may, of course, shift about to such an extent as to overload one substation and trip its direct-current breaker. This throws the entire load on the remaining stations and may, in an extreme case, so heavily overload them that their direct-current breakers may open successively. If these breakers do not trip, the stations will continue to supply the load, but through such a length of feeder and trolley that the voltage drop will become excessive. A form of automatic control has been perfected which permits a substation to limit its own load to its mo-

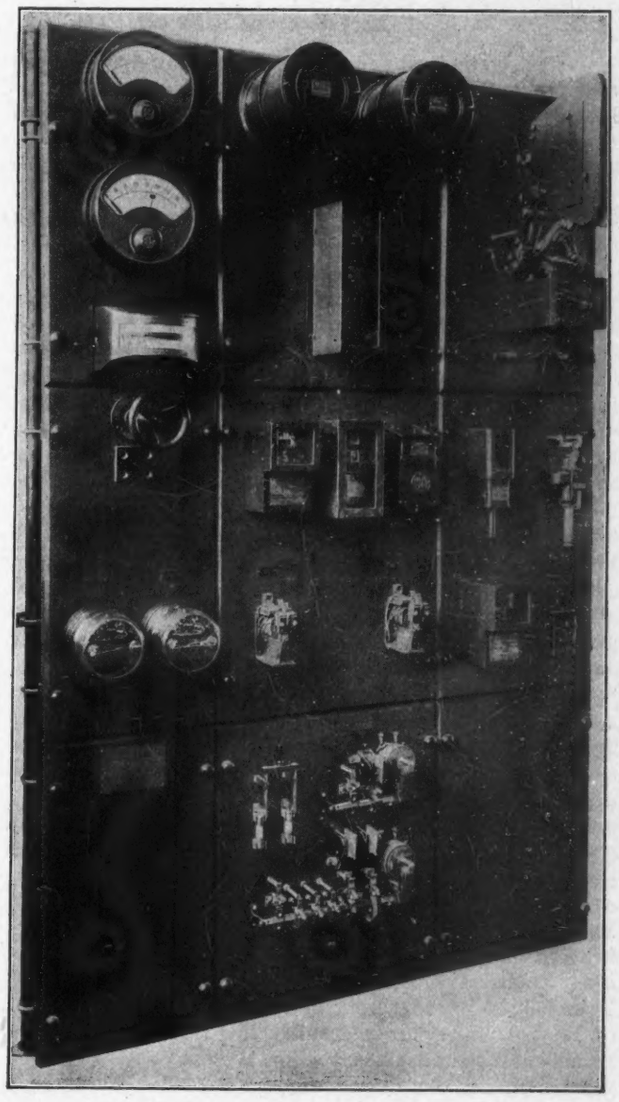


FIG. 3—INSTRUMENT AND RELAY PANELS

Switchboard for a 200-kw. synchronous converter. Protects against severe overload on alternating- or direct-current side, failure to complete starting sequence, loss of excitation, single-phase starting and undervoltage on incoming line, overheated bearings, overheated machine windings, wrong polarity, overspeed and temporary drop in incoming voltage.

mentary capacity without opening its direct-current circuit. This is accomplished by inserting one or more blocks of resistance into the feeder, depending upon the amount of overload. Only the excess load is shifted to the other stations, thus providing the greatest possible continuity of service and the best working voltage.

Two types of automatic reclosing feeder equipment have been developed for stations that feed independently onto the direct-current side as well as for those which sometimes tie in and at other times feed independently. The equipment shown in Fig. 2 is for independent or stub-end feed and is of 900 amp. capacity. This equipment disconnects the load from the source of power in case of overload or failure of voltage. The load remains disconnected throughout a definite minimum time interval of 10 to 30 seconds regardless of the cause of opening. It is then reconnected to the source of power if the voltage has been restored or the load reduced to a predetermined value. As long as the short-circuit or excessive load remains on the feeder the equipment cannot reclose.

Automatic Station Needs No Expert Care

Control equipment for automatic substations has been so simplified that a mine electrician of ordinary intelligence can, after a little study and practice, soon learn to give the station proper attention. Daily inspections are desirable, of course, but a thorough inspection once each week should be made in any case. The time required for such inspections adds little to the operating costs and helps to keep the station in first-class condition.

Starting sequence for both motor generators and converters is the same as that followed in manual operation. Each switching operation is a direct function of the electrical condition of the apparatus at the particular moment and is dependent upon the proper functioning of the preceding operation. In the automatic control of synchronous converters correct polarity is insured by flashing the converter field at the proper point in the sequence from a small motor-driven exciter. The possibility of wrong polarity when this method is used is remote, as the generator polarity would have to be reversed before the method could fail.

All steps in the sequence of the latest type of control are performed by relays, the characteristics of which are such that they respond to electrical conditions of only a certain nature. Standard equipment for either motor generator or converter provides protection against severe overload on either the alternating- or direct-current side, failure to complete starting sequence, loss of excitation, single-phase starting and under-voltage on incoming line, overheated bearings, overheated machine windings, wrong polarity, overspeed and temporary drop in incoming voltage. For stations that operate in multiple on the direct-current side, reverse-power protection is added and if load-limiting resistors are included these are protected against overheating on prolonged overloads. Where the trouble is likely to be of a temporary nature a protective device is employed which resets and permits the resumption of service when the emergency is passed. Where the trouble is such that the station should be inspected or repairs made, the device applied causes a permanent shutdown.

These characteristics permit the automatic substation to perform all the functions of the manually controlled station with the additional advantage of constant "wakefulness."

In England, as Here, Coal Miner Lives Long

NOT only in the United States but in England and Wales the mine workers and their political friends represent mining as disastrous to health and life. The fable is no truer there than here, as the Registrar-General's Table of Mortality among Various Occupations in England and Wales, 1910-1912, conclusively proves. Of course the death rate at the higher ages is not important though motor-car and motor-van drivers, who were probably not numerous in the period indicated, show a consistently low death rate at all ages. Mine accidents are included in the case of miners.

ANNUAL DEATH RATE PER THOUSAND OF AGE REPORTED FOR VARIOUS OCCUPATIONS IN ENGLAND AND WALES, 1910-1912

Age	25	35	45	55	65	75 & up
Seamen, etc. (merchant service)	12.21	16.39	27.01	45.08	84.09	172.14
Bargemen, lightermen, watermen	6.76	11.84	20.53	39.54	77.84	225.35
Fishermen	7.22	10.21	14.25	26.06	59.01	175.91
Chimney sweeps	4.73	12.56	19.19	36.72	64.86	204.48
General shopkeepers	5.85	8.49	16.41	26.59	57.59	159.48
Engine drivers (not railway)	3.87	6.22	11.84	30.85	75.27	209.22
Costermongers	11.26	18.39	27.73	44.48	76.67	228.09
Brewers	6.75	9.95	20.15	36.06	73.18	185.95
Bakers	3.42	6.11	12.84	27.09	59.77	172.83
Patten-clog makers	8.08	10.19	18.02	49.11	91.21	187.50
Carpet, rug, etc., manufacture	3.87	4.15	11.70	29.49	87.96	191.85
Chemists and druggists	4.79	7.55	12.54	29.49	66.44	158.88
Copper manufacture	1.85	5.23	14.85	33.13	85.59	200.00
Carpenters and joiners	3.90	6.47	13.10	27.89	64.38	164.27
Bricklayers	3.49	5.71	12.82	25.19	57.38	159.62
Plasterers, etc.	3.54	6.58	15.54	29.37	67.03	174.52
File makers	8.03	15.92	34.24	50.88	102.73	339.08
Cutlers	6.99	15.38	24.37	44.63	93.63	180.56
Stove grate, etc., makers	2.83	4.82	9.87	24.05	47.26	166.67
Dock laborers	7.63	12.46	21.99	36.44	66.58	169.78
Carmen, carriers	5.09	9.44	16.62	34.23	83.71	237.07
Coalheavers	5.38	10.31	19.20	33.64	70.77	219.05
Coke burners	3.08	3.59	11.14	21.10	75.16	254.90
Engine, machine, boilermakers	4.31	7.22	13.63	30.00	75.69	186.02
Artists, engravers, architects	3.93	7.00	13.27	25.56	71.74	181.94
Railway guards, porters, signalmen	3.99	5.76	10.64	23.70	53.06	131.45
Platelayers, gangers, packers	4.15	5.51	11.17	24.52	73.19	235.01
Railway laborers	5.60	11.51	17.16	32.36	88.78	277.07
Coach, cab, omnibus service, grooms, etc.	4.89	9.62	17.97	34.57	72.74	202.81
Commercial travelers	3.39	6.31	13.02	32.78	69.70	206.83
Stone getters, dressers, masons	4.96	9.24	18.85	36.94	73.67	205.13
Coal, coke merchants, dealers	3.09	5.49	11.44	25.17	60.12	201.99
Patent-fuel manufacture	4.27	9.19	15.98	40.40	66.67	222.22
Iron miners	4.07	6.50	10.25	27.25	65.19	210.44
Tin miners	8.07	22.11	32.37	45.80	109.56	255.71
Lead miners	7.17	9.30	21.33	51.35	132.25	260.42
Coal miners	4.39	6.70	12.65	30.07	82.28	221.77
Coal miners (Derbyshire)	3.38	5.25	10.37	25.19	83.28	247.23
Coal miners (Yorkshire)	4.32	6.92	13.08	32.40	91.52	255.02
Coal miners (Nottinghamshire	3.22	5.01	10.82	23.20	68.28	206.03
Coal miners (Mon. & S. Wales)	4.26	7.09	13.65	33.28	84.52	188.65
Motor car, motor-van drivers	2.64	4.75	7.80	12.24	28.57	133.33

Calorimeter tests to determine the losses in calories of coal heated in the air for various lengths of time are being made at the Pittsburgh (Pa.) experiment station of the U. S. Bureau of Mines by J. F. Byrne. At 125 deg. C. the following heat losses were obtained:

Time of Heating	Per Cent Loss	Time of Heating	Per Cent Loss
30 min.	0.30	3 hours	1.01
1 hour	0.26	20 hours	3.3
2 hours	0.311	46 hours	5.7

Samples were heated for various periods of time ranging from a half hour to 100 hours, and the B.t.u. run by the coal laboratory. The results show no regularly increasing loss in heating value as the time of heating increases. The coal samples show a change of weight on heating—at first a decrease in weight due to the loss of moisture. The decrease is generally less up to 24 hours, when there is an increase in weight of 0.64 per cent. After heating 100 hours at 125 deg. C. there is an increase in weight of 1.35 per cent and a loss in heating value of 3.02 per cent.

Mounting Power Costs, Tire Wear, Circuit Losses and Bonding Problems Well Discussed at Huntington*

Association of Mine Electricians in Second Annual Convention—Relation of Demand to Energy Charge—How Long to Run a Tire—Welding New Treads on Tires—Dynamic Braking—Bonding and Gathering Experience

DEMAND charges, like taxes long established, seem to have lost their first sting. When he first realized that he had to pay them the operator could see no justification for their existence and could not understand why they should be imposed so relentlessly when he was running short time. True, the power company had provided a power plant for the operator's advantage, but so had the coal company opened a mine and equipped it for the benefit of the consumer. Noting this parity of conditions, the operator could but wonder why the power company could make him pay for power when he was not using it, whereas he could not make the consumer pay him a ready-to-serve charge whenever he had an idle mine and consumers who were little disposed to buy.

The first day's session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, which took place Sept 19, seemed to show by its tone that the severity of the demand charge, the unfairness of its fairness, if it may be so stated, is less felt than aforetime, but perhaps it should be remembered that most of those present came from non-union fields and had merely felt the burden of the demand charge during the irregular runs due to car shortage and not the greater onus that arises from a complete shutdown or from the infrequent runs that are occasioned by lack of orders.

However that may be, the electrical engineers showed more interest in the locomotive wheel and tire question as introduced by J. J. Fluck, chief engineer of the Elkhorn Piney Coal Mining Co., Huntington, W. Va., than in the methods of checking power costs as presented in M. A. Maxwell's report, excellent as it proved to be. Mr. Maxwell's report appeared in *Coal Age* Sept. 28.

Institute Meets Electrician's Specific Need

It was nearly 10 a.m. when the meeting opened in the City Hall, the visitors most fortunately being unwelcomed by any of Huntington's many spellbinders. The president, J. H. Edwards, electrical engineer, Elkhorn Piney Coal Mining Co., Huntington, W. Va., opened by reading a *Coal Age* editorial on the association's reason for being, showing that no other organization was doing, or would care to take on, the important work that the present institute was undertaking. The association has its own special needs and cannot expect other societies which have theirs to surrender enough time for the discussion and the recital of the needs of the mine electrical engineer.

The first report read was that of the committee on "Methods of Checking Power Costs." In the absence of Mr. Maxwell, C. E. Rogers, electrical engineer, Logan Mining Co., Logan, W. Va., ranking member of the committee, read the report. In the discussion which followed, W. H. Bennett, of the Buffalo-Thacker Coal Co., Ottawa, W. Va., wanted to know what relation the demand charge should bear to the energy charge in a mine producing 10,000 tons a month.

J. H. Edwards, the president, stated that at one mine having about that production the demand charge was $990 per month and the total power bill, demand plus energy charge, was $3,700, showing that the demand charge was only about 25 per cent. However, as everyone hastened to explain, the relation depends on many factors.

J. Louis Dawson, of the Ironton Engine Co., said it depended on whether trolley or storage batteries were being used. Mr. Edwards declared it depended somewhat on the time of peak on which the demand factor was based, remembering, however, that if rates were fair a short peak-time rate would be made somewhat lower than a longer peak-time rate, thus tending to give an equal result.

Demand Charge Is Often Inevitably High

Mr. Edwards said it depended largely also on the track grades and the hardness of the coal; the demand charge would be high in relation to the energy charge with locomotives traveling on heavy grades and coal cutters working in hard or dirty coal. Though the ratio might be made more favorable by the use of judgment and skill there were inexorable conditions which would afford always a high demand charge regardless of professional ability and faithful attempts to better the ratio.

F. L. Stone, of the General Electric Co., remarked that the ratio depended on the load factor. An electrical engineer with a powerful hoist could not hope to keep his demand charge down to a low figure compared to his energy charge, especially if the main use of power was for hoisting.

H. M. McFarland, of the Simplex Wire & Cable Co., wanted to know the probable electrical cost per ton for a mine producing 2,000 tons per day, and A. Fred Phelps, of the Post-Glover Electric Co., declared that one company was getting power for 3c. per ton produced before the strike and during the suspension for 65c., so great was the effect of inactivity on its electrical costs. A. F. Brosky, of *Coal Age*, remarked that 3c. was a remarkably low figure. Inquiries in Pennsylvania had led him to believe that the cost lies between 7c. and 8c. per ton produced.

Mr. Edwards remarked that the costs of power per ton were estimated in so many ways that they were not comparable. Some overlooked entirely the cost of upkeep and some took no consideration of the income derived from current which was sold for lighting in residences, stores, motion-picture shows and other places. His company charged against the electrical department all the costs of electrification, deducting income from electricity sold to employees and others, and then, having thus found the net cost of electrification, divided

*First of two articles containing the discussion on the papers and reports presented at the second annual convention of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers held at Huntington, W. Va., Sept. 19-22.

that by the tonnage produced, thus obtaining the true cost per ton.

Naturally exception will be taken to this as combining the profits or losses of merchandizing with the actual costs of producing current for use at the mine. It would seem well to meter the current sold so as to find the cost of the current used at the mine and to find out whether the current thus merchandized is being provided at a profit.

Mr. Edwards said that when a company uses 200,000 kw.-hr. per month at any single group of operations it should certainly investigate carefully whether it would pay to install a generating plant of its own. Should it use 500,000 kw.-hr. per month it would certainly be well to erect a plant and not buy current. C. E. Rogers agreed that these current consumptions represented the limits for careful investigation and unfailing adoption respectively.

How Long May a Tire Be Safely Used?

The report of the committee on "Mine-Locomotive Wheels and Tires" was then presented by J. J. Fluck, its chairman. This report appeared in the issue of *Coal Age* of Sept. 14. R. R. Webster, of the Elkhorn Piney Coal Mining Co., Weeksbury, Ky., in the discussion that followed, asked: "How long may a tire be safely worn before it is discarded." J. L. Butcher, of the Amherst Coal Co., Amherstdale, W. Va., said that he believed in allowing a tire to continue in use so long as it "stays in center" and does not become loose. Another declared that with the larger wheels, such as those which were 30 in. in diameter, the tires could be allowed to wear till the tire when turned smooth would not be less than 1½ in. thick. The tires on 12 or 14-in. wheels can be allowed to wear down thinner than 1½ in. Mr. Butcher said that tires rarely become loose, but he admitted that he had observed wheels on mine locomotives with loose tires.

Mr. Butcher in reply to Mr. Edwards qualified his sweeping statement as to the safety of tires when worn almost away by saying that when the tire on a 30-in. wheel wears down so as to be only ¾ in. thick after finishing it could not be regarded as safe. He said that he had built up the tires of small wheels electrically and got good results. He would not fill cast-iron wheels. It would not pay to weld a new tread on such a wheel either electrically or with acetylene, for by the time such a wheel had been annealed and turned it would have been cheaper to have bought a new wheel.

He thought that the manner of welding by small increments around the wheel, starting from four points equally disposed about the circumference, as described in the report of the committee, was the right method, as thereby warping was prevented. Asked why he welded only small wheels he said that large wheels could be welded with equal ease and with just as satisfactory results but that if the wheel was so large that there were no facilities at the mine shop to turn it it would not pay to do the welding.

He said that every mine shop should have an electric and an acetylene welding outfit. Mr. Rogers remarked that whether wheels are built up or not at the mine shop a welding outfit should be provided, for it pays to have one. Mr. Fluck stated that the Elkhorn Piney Coal Mining Co. turned wheels up to 30 in. in diameter.

The discussion veered to dynamic braking and someone objected that where this practice was followed it was difficult to start when a locomotive went down a grade to get a car which was on the pitch. Mr. Butcher remarked he was not greatly in favor of dynamic braking and said that the theory was good but, unfortunately, in gathering the men will "goose" or reverse their motors instead of braking them. He did not think dynamic braking suited to main-line haulage.

The motors were supposed to start in series but the men would not make use of that method of starting, switching immediately instead to the parallel position. J. L. Dawson said that most of the "goosing" was done when gathering. The men did not wait to set brakes.

A. Fred. Phelps, of the Post Glover Electric Co., said that though he was strongly in favor of dynamic braking he could not "bring himself to see it" in the larger locomotives. He added that most of the companies were not using dynamic braking on locomotives weighing more than 8 tons, but Mr. Fluck said that the Goodman Manufacturing Co. was using it on locomotives in excess of that weight. One company had tried to equip a 14-ton locomotive for dynamic braking and had found that the result was not satisfactory.

J. W. Tierney, of the Electric Storage Battery Co., said he did not see how braking down a hill would heat up a motor if it did not heat going up, but Mr. Phelps replied that on going downhill the speed may and probably will exceed that pulling uphill and the heating is from the speed with which the armature turns. Going up the speed is about 6 miles per hour and going down it may be 10 or even 15 miles. Reuben Lee, of the Elkhorn Piney Coal Mining Co., of Stanaford, W. Va., said that he found that soft cast-iron brakes were preferable to feralun. No one volunteered any indorsement of this declaration.

Fifty Automatic Substations Already Running

The attendance on Wednesday, Sept. 20, was larger than at any of the other meetings and the interest was considerable, though regarding the first paper and the close of the second there was little discussion. The automatic substation excites much interest but is so little understood by the average mine electrical engineer that he is not ready to discuss it. The first paper, "Automatic Electrical Apparatus as Applied to Coal Mining," was delivered by C. E. H. von Sothen instead of by M. A. Whiting, who was unable to attend. The paper was well illustrated by slides, among which were several showing an installation at the Inspiration Consolidated Copper Co.'s mine.

The marked trend in the industry toward automatically controlled equipment was voiced by Mr. Edwards. Three years ago his company considered installing a 300-kw. automatic substation, but the electric companies discouraged the project. He asked how many automatic substations there were in this country, and the answer developed that about fifty of them were in operation.

Mr. von Sothen, in answer to an inquiry, declared that he knew of only one truly automatic hoist in the world and that was the one he had described. It was installed six years ago and consisted of two 580-hp. units. Asked as to the type of motor best adapted to an entirely automatic high-speed hoist, von Sothen said that the torque of the direct-current shunt motor with voltage control varied but little with the load, and therefore was best suited for that purpose.

Mr. Edwards expressed his belief that the time was not far distant when every modern mine, whether equipped with converters or motor-generator sets, will

have one or more automatic substations. His company, as well as many others, is beginning to realize more and more the importance of automatic devices, and he even went so far as to say that he believed that automatic starters would be used even for the operation of small squirrel-cage motors. Mr. Suiter added that the Winding Gulf Coal Co. has an automatic slow-down and stop at one of its mines. For the five or six years that it has been running the installation has been giving satisfactory service.

The second paper of the morning, on "Underground Transmission and Distribution," was read by J. C. Fuetter, chairman of the committee appointed to report on that subject. His paper was reproduced in full in the issues of *Coal Age* of Sept. 14 and 21. Mr. Edwards opened the discussion by asking whether substations close to the shops should be automatic or manual. Mr. Fuetter recommended that the automatic substation be used under all conditions, as it is far superior to one that is manually operated, being more reliable, less expensive to operate and more desirable in every way.

Squirrel-Cage Motors Suited to Mine Work

A. M. Lupton, of the Lincoln Electric Co., said that squirrel-cage motors of modern design should find more extensive use about the coal mines, where the torque rapidly falls off after a maximum torque is reached. E. D. Knight said that this type of motor is used extensively for raising and lowering loading booms on the tipple. He then asked what provisions were made for brush raising and lowering at the Van Lear installation, to which Mr. Fuetter responded that the substation was equipped with a motor-generator set.

The subject of electric-weld bonding having been mentioned in the paper, J. L. Dawson asked if the association would go on record as recommending electric-weld bonding in preference to all others. A decision was made to delay such positive action until a later date. According to Roscoe Woltz, the electrically welded bond is difficult to make on old rails. Mr. Lupton declared that successful arc-welding can be accomplished only with a motor-generator arc-welding bonding set. Though its initial cost is several times that of the resistance type of welder, it should be used nevertheless, as only by its use can good work be expected.

C. E. Rogers then presented the report of his committee on the "Relative Merits of Storage-Battery, Combination and Conductor-Cable-Reel Locomotives." This report appeared in *Coal Age* in the issue of Sept. 14. L. W. Scott desired to know something regarding the length of haul and the territory negotiated by the battery locomotives mentioned in the paper and whether they were shifted from place to place. Mr. Rogers replied that a locomotive in most circumstances should be allotted to a particular territory, from which it seldom should be removed. The locomotives under discussion worked in a mine laid out in a panel system, 15 rooms on an entry, placed on 60-ft. centers and 300 ft. deep.

It was learned through Mr. Edwards that R. L. Kingsland, of the Consolidation Coal Co., recommends the straight storage-battery locomotive in places with grades up to 5 per cent, the combination locomotive in places with grades up to 10 per cent, and the cable reel for steeper grades. H. E. Carlton asked whether machine-wire costs should be credited to reel-type locomotives and debited to the straight-battery locomotive. Mr. Rogers said No; that haulage costs must be kept apart from other operation costs.

R. W. Whetstone said he believed that battery depreciation has a direct bearing on the compilation of costs, and that the charging apparatus should be made entirely automatic if depreciation charges are to be lowered and the life of batteries is to be increased. Mr. Edwards said that the depreciation of batteries will be lowered, as the men learn more regarding their care and maintenance for locomotive duty. He called attention to Mr. Rogers' figures showing that the cost of depreciation was being lowered each year even though the age of the batteries steadily increased.

In the afternoon a group of the men were the guests of the West Virginia Rail Co., whose rolling mill lies on the outskirts of Huntington. The party was shown through the plant by the superintendent, H. H. Diehl, who explained the processes involved in the evolution of a steel mine rail, whether made from scrap railroad rails or from billets.

Mr. Diehl said the manufacturer of steel rail was frequently blamed for defects that arose from the careless use of the electric-weld bonding machine. The burning of the rail frequently weakened the steel, and for defects thus caused the manufacturer could not be held responsible. He laid successively several lengths of rail over two supports spaced at an interval of 2 ft. and struck them with a steam hammer after first making a slight impression with a cutter on the flange of the rail. He showed thereby that a single blow of the hammer would make a clean shear. A similar rail without that slight nick would bend without breaking, which proved his contention that a slight weakness at any section will concentrate the strain at that point. He recommended the placing of the bond on the web of the rail instead of at the base or flange.

None of the Fractures Touched the Weld

The following afternoon several bond contacts were made by means of an electric welding apparatus in the exhibition hall, and these were taken to the mill to be broken. The results showed that it really makes little difference where the bond is made on the rail, provided care is taken not to burn the steel. Those who witnessed the tests were of accord in pronouncing the base of flange the most logical position for a bond because this is the place where it can be most easily applied. The samples broken had been bonded in different positions, but the fractures showed that the rail did not break through the bonding contact but rather around it, provided the weld had been made with due care.

Oxygen and Air in Monoxide Poisoning

DR. R. R. SAYERS, chief surgeon of the U. S. Bureau of Mines, calls attention to page 412 of *Coal Age* of Sept. 14 and says that he should have been quoted as saying that ordinary air is a long time removing carbon monoxide from the system, but pure oxygen, if breathed normally, will remove the monoxide in about one-fourth the time and that oxygen mixed with 10 per cent of carbon dioxide requires one-fifth to one-sixth as long. Dr. Sayers adds that 5 per cent of carbon dioxide apparently works very nearly as efficiently as 8 to 10 per cent. Pure oxygen is often available at the mines and should be used as early as possible in the treatment of carbon-monoxide poisoning.

Grading and Making Height in Mine Entries

IN MINES which have gradients to be eased, where the roadways have been driven low in headings or rooms, where creeps have blocked the roadways or where grading has to be done to promote natural drainage the two illustrations of the work of the Shuveloder in the mines of the Old Ben Coal Corporation, Illinois, will be of interest, the purpose in this

FIG. 1—TAKING UP A DEEP CUT IN A MINE OF THE OLD BEN COAL CORPORATION IN ILLINOIS

Note the fact that the clay has not been previously broken by heaving or shooting. Apparently no berm is being left under the edge of the coal—that is, the machine is grading the clay the full width of the heading.

case being merely to remove an unfavorable grade. Inspection of the illustrations will show that the work has in this instance been in no way eased by a severe creep. The clay is mined without shooting to a depth of 4 to 5 ft.

A difficulty with this machine is that it requires compressed air to perform its work and that is not always available, but where it can be obtained or there is enough work to be done with the loader or with air drills or both to justify the installation of a portable compressor it will certainly be of great assistance. Should it be necessary to load falls or to pass through caved ground it will be of advantage there also. It will load coal below ground or above. Thus it is loading coal inside the mine of the Bellingham Coal Mines

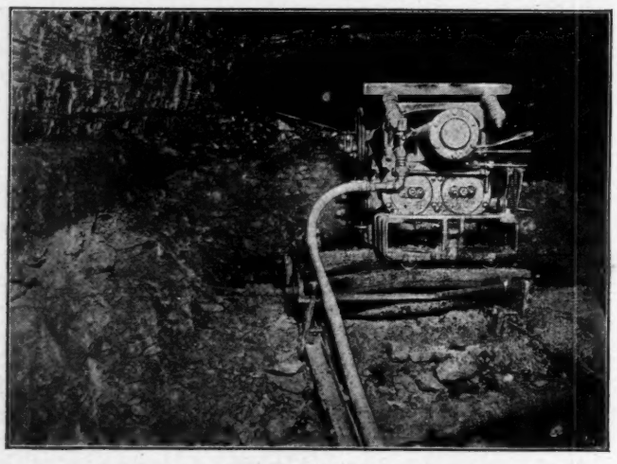


FIG. 2—ANOTHER VIEW IN THE SAME MINE

The solid character of the clay being dug is quite apparent in the illustration.

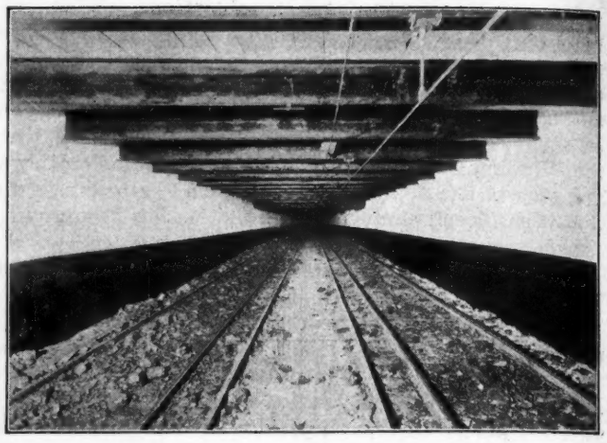


FIG. 3—A ROADWAY IN THE SAME MINE

The roof has been timbered with steel and the sides covered with concrete and partly whitewashed. Note how well fitted the roadway is for safe and rapid haulage. This haulway was graded with a Shuveloder.

at Bellingham, Wash., and as shown in one illustration it is found available for loading coal from a stockpile at the iron mines of the Oliver Iron Mining Co., Chisholm, Minn. Being small and low it can move around trestles readily. It can be used, therefore, in connection with the recovery of coal from stockpiles either at the mines or at the point where it is to be used. It is further available in removing rock piles, making open cuts to drifts, etc. Speed in removing rock often means far more than an economy in labor. A heavy rock fall may shut off a large part of a mine and delay operations for several days, perhaps a whole week. Such a fall occurred in the Carlinville mine of the Standard Oil Co., and in about ten hours of actual

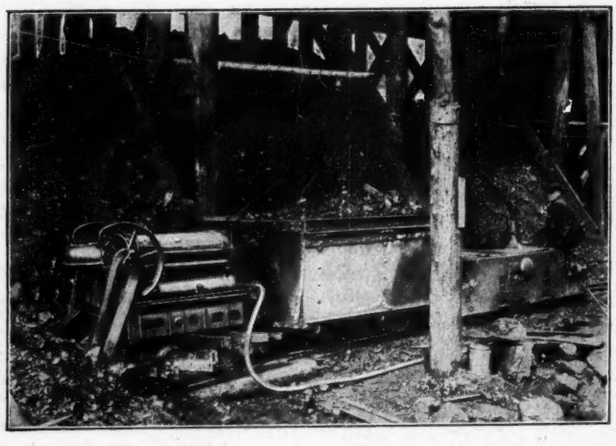


FIG. 4—LOADING COAL FROM A STOCKPILE

This is from a photograph taken at the Oliver Iron Mining Co.'s iron mines at Chisholm, Minn. The shovel is in the starting position and, as will be noted, it has buried its nose deep in the pile.

operation about 50 cars were removed. It is much used by contractors for tunneling and, of course, would be available for similar work in mines where it would do the "mucking" far more rapidly and cheaply than men.

PRODUCTION OF COAL from leased lands on the public domain of the United States approximated 240,000 tons during the first six months of 1922. The production would have been considerably greater than this had it not been for the general coal strike which began April 1. Technical supervision of the operation of coal mines on leased public lands rests with the U. S. Bureau of Mines.

French Colliery Association Taxes Buyers of Low-Price Coal to Reimburse Those Charged High Rates

Price Controlling Body Thus Maintains Standard Price Established—Reparation Deliveries of Coal Decreased, Coke Increased—Suspension of Eight-Hour Law Proposed—Movement on Foot for University of Labor

BY C. H. S. TUPHOLME
London, England

IN INVESTIGATING the French coal industry that which first strikes the foreign observer is the power of the French Colliery Association or Comité des Houillères. The function of this organization in France is to dispense with all competition between the various industries in the matter of coal supply and to act as a permanent price-controlling body.

At regular intervals the Colliery Association takes inventory of all the coal sold in France, whether it comes from Great Britain, America, Belgium, German reparation deliveries or from the French mines themselves. When this is done what is known as a standard price is established based on the various prices paid for the coal obtained from the different sources and the conditions then obtaining both at the place of delivery and in the French coal-consuming industries. Then those concerns which paid less than this standard figure are taxed to the extent of the difference, and the revenue collected in this way is paid over to those who paid more than the standard. In this fashion conditions are evened up and the man who buys British coal pays no more for it in the long run than the employer who is located near the German frontier and burns German reparation coal. For instance, reparation coal from Germany, which has to be delivered to France at German home prices, was costing the association around 50 fr. a ton. This coal was sold to French industrial concerns at 90-100 fr., leaving a profit of 40-50 fr. on every ton of German coal. This margin was then paid over to those who had bought in the more costly markets.

ELIMINATES COMPETITION FOR CHEAP COAL

Naturally this method involves some very complicated and delicate accounting, and I have not yet met anyone who could tell me just how it was done, but it works out all right, since French coal operators are paid more for their coal than it is sold for to industrial concerns and the method obviates competition for cheap coal. The manufacturer is happy in consequence.

The French Coal Association is not in the nature of a state bureaucracy but it is a powerful organization, exerting great influence with the government and the press. It has also played a large part in the restoration of the devastated areas.

In connection with the reconstruction of the French coal fields in the devastated areas, it is of interest to note the progress made in the important Lens and Courrières fields. The output of the Lens mines for the first six months of 1921 was 107,500 tons against 205,600 tons in the same period of 1912. In the Courrières area the output was only 597,800 tons during the whole of 1921 against 556,700 tons in the first half of 1912.

Of mines which were not damaged during the war, the output of the colliery at Bruay (Pas-de-Calais) is now the largest in France. In 1920-1921 it produced 2,405,000 tons, but I am told these figures could easily be improved upon if need arose. During the war the annual output exceeded 4,500,000 tons. The possibility of expansion is due to the extreme regularity of the Bruay field, which renders it easy to extract the coal. Bruay coal is especially suited for boilers, as it gives very little dust and burns clean. The net profits of this colliery for the year 1920-1921, after payment for all plant and allocation to reserve, amounted to nineteen million francs.

After the European trade boom France found herself with a gradually accumulating stock of coal for which no market could be found. To remedy this situation the Colliery Association got busy with foreign sales bureaus, so that now coal mined in the Saar area is actually being sold in Germany at several francs less per ton than in France. Thus the curious situation has arisen of Germany delivering coal to France to recompense her for the French collieries destroyed by Germany during the war, while France sells the same coal back to Germany at a discount.

Lately, however, this system has not worked so satisfactorily. In order to increase revenue as a result of the demands of the reparation commission Germany has raised the home price of her coal—and thus the price of delivery to France, for it will be remembered that coal must be delivered to France at German home prices—and increased her freight rates. As a direct result the French Colliery Association has had to increase its standard price. Again, Great Britain has been selling coal at 6s. less than British home prices in order to

© Williams

A FLOATING RETAIL COAL YARD IN AMSTERDAM

The proprietor, one Walinca, advertises that he specializes in English and Belgian anthracite, gas coke and briquets. Car shortage will not bother a dealer who can float his yard between incoming ship and customer.

stimulate a demand, and as a result more than six million tons of British coal was imported into France between January and June this year against five million in the whole of last year.

Between these two factors the position of the French collieries has become unenviable. Several of the largest pits have had to close down altogether and production generally has had to be restricted. This problem has been partly met by decreasing the reparation deliveries of coal and increasing the reparation deliveries of coke, of which French metallurgical industries are short.

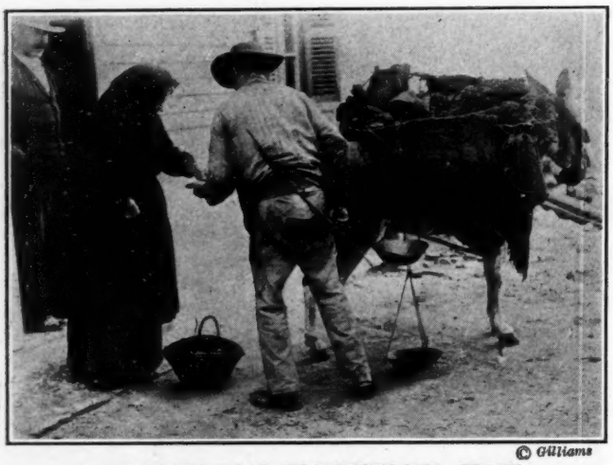
Naturally such a situation has resulted in various labor troubles and the question of an agreement between producers and men on wages and working conditions is again to the fore. The former complain of the arrangement by which the men do no more than six hours and twenty minutes of effective work per day. They also point out the tendency of the men to withdraw from the mines and engage on reparation work in the devastated regions, returning to work in the mines as the season suits them to do so.

Departure of War Prisoners Cuts Production

An interesting labor point finds mention in the report on the production of the St. Etienne and the Rive de Gier groups of coal mines, which showed a marked decline after the year 1918. This decline is attributed, first, to the departure of the prisoners of war, numbering close to 5,000, who proved to be good workers. The very short working day is blamed for much of the reduction, which has been made up only by improvement in the mechanical equipment and the engagement of larger numbers of men. The output per man is stated to be very distinctly lower than before.

A serious situation in the industry was revealed at the Douai meeting of operators and men. In spite of the decreased imports of British coal and a slight diminution of stocks held in France the operators are endeavoring to impress the men with the necessity for reducing working costs in order to keep the industry alive. The operators argue that this cannot be done by modernization of plant alone but that either individual output must be increased or wages cut. On the other hand the miners will fight any cut in wages, insisting these are low enough and that the price of bread has just been raised 30 centimes per kilo.

The French Coal Congress, which met recently in Paris, supported the demand for the enactment of legislation suspending temporarily the application of the eight-hour day law in France. A bill has now been introduced in the Chamber of Deputies providing for the suspension of the act until the restoration of normal industrial conditions. Another measure before the Chamber proposes that coal miners be permitted to work more hours while importations of coal exceed 5,000,000 tons per annum.



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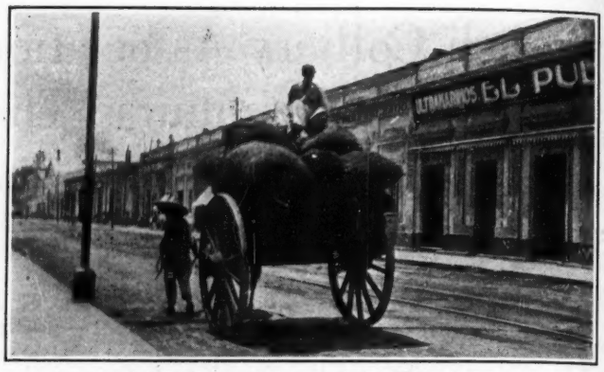
RETAILING COAL IN BARCELONA, SPAIN

In the lower east side of New York coal is peddled in bags and baskets, but the donkey and pan scales, such as this picture shows, have not been introduced. The size of order in the baskets on the ground makes one think of a coal shortage.



DELIVERING COAL IN MEXICO CITY

Between the Amsterdam barge and the Spanish donkey coal yards is the Mexican peddler cart. H. M. Payne, who sent us the picture, says a donkey is pulling this load, not the chap in the big sombrero in front.

The seriousness with which the outlook in the French mining industry is viewed is seen also in the recent announcement of the abolition of the coal tax.

There is a movement on foot in France to create a National University of Labor. This movement has the support of the majority of the large industrialists, and committees are working in the principal industrial centers with a view to founding in each area a university where the working classes of every age and type will be enabled to improve the selling value of their labor. It is proposed that a directing board be formed composed of state officials, technicians and employers and employed in the more important trades and that tuition be given by professors and lecturers from the neighboring universities and technical colleges.

Issue Bulletins Describing Geology and Coal Resources of Pennsylvania

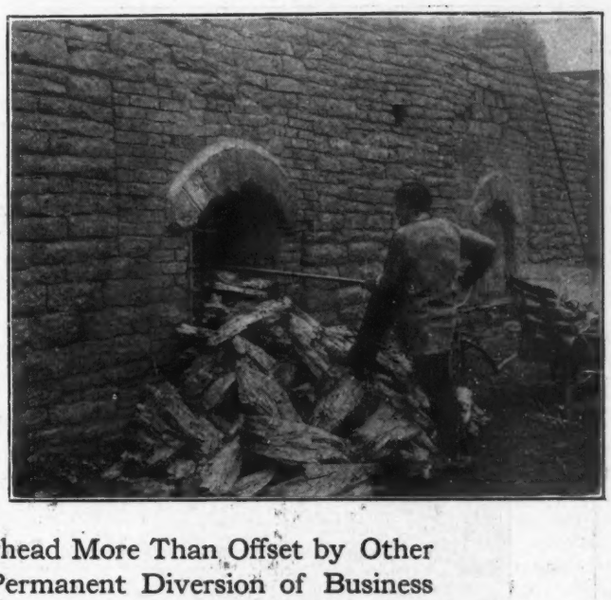
THE Bureau of Topographic and Geological Survey of Pennsylvania has put out in the form of bulletins much valuable information concerning the geology and coal resources of the state. Thus in bulletins Nos. 26, 32, 34, 38, 41, 42, and 46, J. D. Sisler describes the coal beds in Washington, Fayette, Westmoreland, Armstrong, Elk, Jefferson and Butler counties, respectively.

These bulletins in each case briefly take up existing conditions so far as commercial coal mining is concerned, following this with a description of the geologic structure of the area under consideration. This is succeeded by a description of the stratigraphy and lastly by an enumeration of the coal beds present. This section of the bulletins contains much valuable information concerning the thickness and quality of the various coal measures.

Bulletins of this kind are of much value to those contemplating the opening of a mine or mines in the region treated or to those seeking detailed information concerning any one or all of the coal beds of the state. Mimeograph copies of these bulletins may be secured from the Bureau of Topographic and Geological Survey.

Price the Connellsville Coke Region Will Have to Pay for Present Strike

BY JOHN L. GANS



Unearned Wages, Profits and Overhead More Than Offset by Other Losses That Are Irrecoverable—Permanent Diversion of Business to Other Fields and to Byproduct Ovens Constitutes Greatest Injury

THE Connellsville coke region will pay a heavier price as the cost of the present sympathetic strike of its workers than for any previous interruption in its history as a fuel-producing center. The total will not be found by multiplying the number of weeks the strike lasts by $850,000, the estimated weekly loss in wages of the 28,000 men who have been idle since early in April, nor yet by adding thereto the calculated loss to the operators of the profits on 200,000 to 300,000 tons of coke which could have been made and sold at a fair price to furnaces and foundries had not the coal and railroad strikes laid their withering blight on transportation and industry.

Neither will the aggregate be found by adding to the combined wage and profit loss the extraordinary expenses incurred by reason of the measures necessary to safeguard the mining and coking properties, keep them in a workable condition, protect the men who are willing to work and preserve order in the strike-affected districts. What these costs are, or what they will amount to before the emergency requiring defensive and protective precautions shall have passed, cannot be approximated. They will vary greatly with the conditions, size and number of operations and other circumstances.

In the case of the H. C. Frick Coke Co., owning fifty-five mining and coking plants, the burden is plainly very much heavier than on any other single interest. The problems this and all operators who are striving to restore or maintain plant activity, if no more than on a small scale, will have to meet until the walkout is over and done, involve heavy expenditures. These are not limited to overhead at mines representing investments of millions of dollars in equipment and development where handfuls of foremen, mechanics and a few diggers of boiler coal who keep the mines in ship shape are the only employees on the job. Special watchmen and guards are on duty throughout the region. Transportation, commissary and other incidental expenses which their employment entails, and a wide variety and large number of miscellaneous items which do not come up in the normal operation of mines and coke ovens call for a prodigious outlay.

There are other and indirect costs, such as the inefficiency of untrained men who have taken the places of the strikers; the destruction or damage of miners' houses, mine buildings, tipples and other structures by fire or explosives, and the complete or partial wrecking of machinery and equipment.

But numerous and diverse in character as are the direct and indirect monetary losses which are being sustained by employers and employees because of the strike, and staggering as would be the grand total if it were possible to reduce it to figures, it is the deliberate judgment of persons who have given serious thought to the ultimate effects of the strike in the Connellsville region that the current losses are in part recoverable and in a sense inconsequential as compared with the losses that are likely to be irrecoverable.

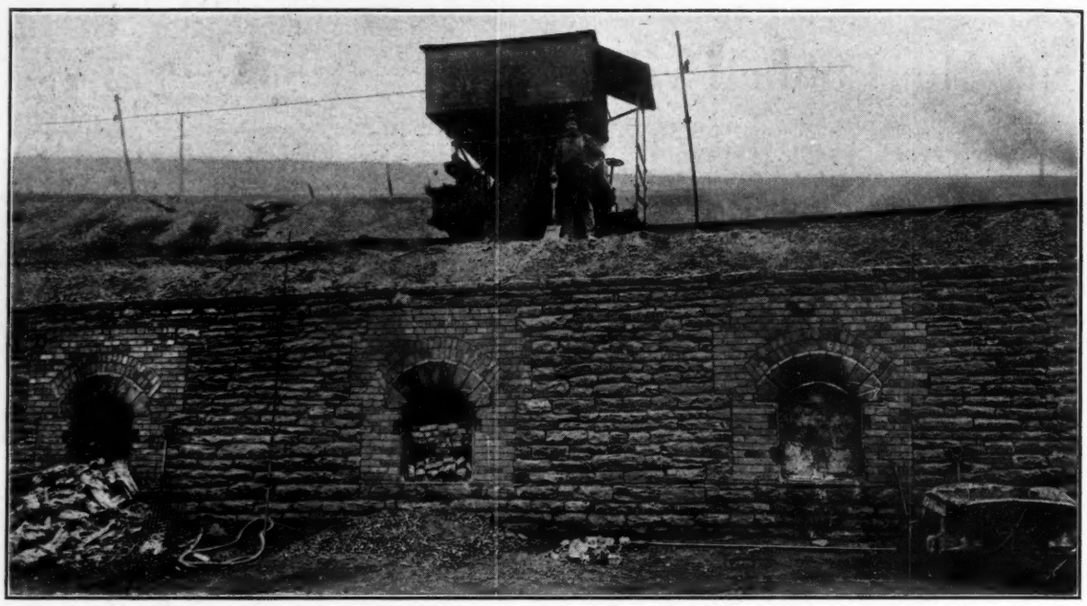
MAY SUFFER PERMANENT DIVERSION OF BUSINESS

Much of the greater part of the price the historic and famous producer of the standard metallurgical fuel of the world will have to pay for having had the temerity to resist the demands of an oligarchy of mine labor is the permanent diversion of business to other fields and to the byproduct coke oven—the only formidable competitor of the beehive oven as the latter has been developed in the Connellsville region.

This development has been of comparatively slow growth, the rate of which has been measured by the expansion of those industries dependent upon coke for their manufacturing processes. Beginning in the early 80's to assume importance as a fuel source, the region grew gradually in productive capacity until the maximum of 21,654,000 tons was reached in 1913. Since that date each recurring interruption to industrial peace and progress, such as railroad and steel strikes, has been instrumental in further restricting the markets for Connellsville coke and has sent buyers to other fields or set them to building byproduct plants.

Competitive regions like West Virginia have taken a share of the trade previously believed to have been wedded to the Connellsville region for its natural life,

NOTE—At the top of the page is a good illustration of the coke that made Connellsville famous.



CONNELLSVILLE "BEEHIVE" COKE HAS NOT YET PASSED INTO HISTORY

The oven on the left has just been drawn, the one in the middle is being charged with coal from the larry above and the oven on the right is fired and making coke.

but the contemporaneous expansion of the byproduct industry has been the more direct cause of the reduction in the volume of demand for Connellsville coke. This is definitely shown by the fact that production in 1920 was barely 50 per cent of that in 1913, and last year, a lean one in industry, it was only about 16 per cent of that in the banner year. The significance of these declines becomes more striking in view of the reciprocal fact that until 1921 coke consumption had grown by a sort of geometrical progression.

Notwithstanding the sympathetic strike, which still persists with great obstinacy, at no time during the walkout has production been at quite so low a point as in July, 1921, when the industrial depression restricted output to 20,000 tons and less per week. In view of the grimness of the struggle to reduce the region to inactivity it is noteworthy that the average rate of coke production since April 1 has been considerably in excess of the average for 1921. The independent producers and merchant consumers have not benefited therefrom, however, because 80 per cent of the production has been at plants of the coke subsidiary of the United States Steel Corporation, hence not available in the general market.

In consequence, coke consumers who have heretofore been dependent upon the Connellsville region have been forced to make other connections in order to obtain a supply of fuel. Some have gone to the Southern coking fields and others have become buyers of the excess production of byproduct plants operated in connection with furnaces. Others have bought from merchant byproduct operations, which, so long as they have been able to obtain a supply of raw coal, have been running at maximum capacity. True, the railroad strike has made reliance upon these sources even less secure than upon the Connellsville region, but with production in the old union fields again resumed the chances favor a resumption of relations established outside rather than a return of some former customers to the Connellsville region.

Contemplation of these things is what causes thoughtful observers of the situation to arrive at the conclusions they have with respect to the ultimate cost of the strike in the Connellsville region. Even when the natural order is again restored, as it will be in due course, there will be, it is feared, disinclination on the part of some coke consumers who have made other trade connections, to return to their first love. Especially will this be true if the strike settlement is of such character that the coke region will not be insured against periodical interruptions similar to those which have prevailed in the strongly unionized districts.

It may appear to some persons that even if the Connellsville region loses coke trade it will still remain a large producer of coal as the raw material in byproduct coke manufacture, and thus be compensated. This is quite true, but the mine operators of the region are essentially coke makers and to that product they very properly attribute the success they have achieved. Many of them have already adapted themselves and their plants to the simpler process of mining and shipping raw coal, but there is a lure and some sentimental association attaching to coke making, not to speak of the business advantage which is derived from the larger measure of profit obtained from coke when the market price is several times greater than the price of the coal equivalent. The present market, with coke $15 and up, compared with the Hoover price of $4.50 a ton for coal, is a pertinent case in point.

Such market conditions do not prevail except at more or less infrequent intervals, but there is a natural desire on the part of the operators to be in position to enjoy the benefits when they are obtainable. That a lessening in the number of such opportunities will be one of the costs to the Connellsville region in consequence of the sympathetic strike counts quite as much as part of the cost as does the disruption to selling connections established after a number of years of patient effort.

Problems of Operating Men

Edited by James T. Beard

Robbing Pillars in Undersea Operations

Submarine Mine of the Dominion Coal Company—Drawing Pillars in Lower Seam—Work in Upper Seam Stopped While So Doing —Working Out Upper Coal First Is Suggested as Safer Plan

REFERENCE was made some time ago in *Coal Age* to the undersea mining of the Dominion Coal Co. at Cape Breton, N. S. It occurs to me that the following paragraphs quoted from the *Canadian Mining Journal*, May 12, 1922, will be of interest to readers of *Coal Age*.

'The Dominion Coal Co., Cape Breton, has begun drawing pillars for the first time, in their largest undersea colliery, No. 2. As another seam overlying this one is being worked by a separate shaft, it was found necessary to stop mining above, until the pillar work below is well advanced.

"It is reasoned out that if work is concentrated on pillar sections and these are rapidly extracted the subsidence will be gradual and the strata will settle without danger of fractures running to the surface, which would not only be dangerous under heavy mountains of water but would affect the workings of the upper seam.

"The mining of undersea coal requires great care. So far it has been costly, as thick pillars had to be left while entering the submarine field. Heavy barrier pillars must be left between sections to provide against accidents from inrush of water. Now that the collieries are reaching the stage where pillars can be drawn, the necessity for continuous development will not be so great.

"There is 1,600 ft. of cover over the pillars of this colliery, at the point of pillar attack. Between the upper and lower seams now being worked there is 450 ft."

Viewpoint of an Outsider on the Order of Working Seams

In commenting on the above method, it is not my desire to do so in a critical way. The officials of the company in charge of the mine are thoroughly conversant with the local conditions and behavior of the strata forming the overburden. It is probable that they have determined their course of action after mature deliberation and careful study of these conditions in the light of their experience.

However, judging by the information given in the article to which I refer, it appears that they are proceeding in exactly the reverse order from what is the general custom and practice. From the viewpoint of an outsider not having the same intimate contact with the work, it would seem that the upper bed should be worked out first.

Irregular Subsidence Caused When Lower Pillars Are Drawn

Unless the strata lying between these two seams of coal are unusually strong and well knit, the drawing of the pillars in the lower seam will undoubtedly cause an irregular subsidence that will produce annoying faults and rolls in the upper seam.

On the other hand, should the drawing of the pillars in the upper seam, on its completion, cause fissures to develop that would permit water to enter the mine, there would still remain the 450-ft. of strata that separates these two seams.

In the later working of the lower seam, with 1,150 ft. of solid strata remaining undisturbed, there would be little doubt but that the strata would overarch and be self supporting. In that case, the work of extraction could cause no settlement that would entail danger by reason of water breaking into the mine from the upper seam. It will be interesting to learn the opinions and experience of others in this regard.

CHARLES M. SCHLOSS.

Denver, Colo.

Conditions Determine When It Is Advisable to Seal

Practice in regard to sealing abandoned areas varies with conditions in the mine—Experience in southern Illinois—Method of working the chief factor.

IN READING the several letters that have dealt with the subject of sealing off abandoned areas, one is impressed with the thought that conditions alone can determine the safest method of proceeding in this respect. While my own custom has favored sealing off places that are finished, I must admit that many good reasons both for and against the practice have been advanced.

With Ostel Bullock, who writes under the caption "Success of Any Plan Depends on How Carried Out," *Coal Age*, June 8, p. 967, I believe the conditions existing in the mine must be the only safe guide. The records show that practice varies with the conditions. What is a safe plan to follow in one locality would be a dangerous proceeding in another.

My own experience, in the mines of southern Illinois, has convinced me that the sealing off of old works is the safest thing to do in that district where the mines are generally gaseous. At any rate, this is true as long as the present method of working in those mines is followed.

An instance comes to my mind where we sealed off a pair of cross-entries that were worked out and finished. The section was generating much gas and, though the seals were well built, I have often found gas oozing out through the stoppings onto the main haulage road. This was more noticeable at times when the barometer was falling.

Owing to the fact that there was a good current of air traveling the roadway, the condition was not dangerous, as the gas was quickly diluted and passed out of the mine. Had there been no seals closing the mouths of these entries, however, I believe the volume of gas coming from them would have produced a dangerous condition at that point on the road.

Greater Protection Afforded by Multiple-Entry System

In my opinion, the main point, in respect to sealing off abandoned areas to make the mine safer, is the method of working adopted in the general plan of the mine. I refer particularly to the use of the triple-entry system of working, in preference to the double-entry system so commonly employed. These two systems have been explained and illustrated so frequently in *Coal Age* that it is unnecessary to dwell on their points of difference.

It is well known that the double-entry system provides but single main intake and return airways; and the haulage road, even when this is made the intake, is not protected from conditions that may arise in the workings, on that side of the mine, by reason of a squeeze or a heavy fall of roof occurring in worked out portions that have been sealed.

On the other hand, the triple-entry system provides a separate haulage road, which is made the intake for the entire mine and is flanked on either side by a main return air-course that separates it from the workings on that respective side of the mine. In this arrangement the haulage road is protected from any dangerous conditions that may arise in the old workings.

Many a time I have seen a panel on the squeeze, even in live workings where machines were cutting the coal and locomotives hauling it out of the mine. The fact that everybody was using open lights has often made me wonder that more accidents have not been recorded under these conditions of working.

Other Advantages in Adopting the Triple-Entry System

A point I wish to emphasize is that, in the three-entry system of working no person is required to enter the return airway, except mine examiners and other mine officials for the purpose of investigation. All the coal is hauled out on the main intake and the drivers and men are protected from coming in contact with explosive conditions when passing out or into the mine. Not the least advantage is that no trapdoors are required on the main roads, thus saving the cost of their upkeep and attendants' wages.

My conclusion is that where a mine is worked on the two-entry system all abandoned areas should be sealed and carefully watched. On the other hand, in the use of the three-entry system of working, the sealing off of these areas is not a necessity, as the arrangement provides ample means for the escape of the gases generated in such areas.

George Bowker.

West Frankfort, Ill.

Reducing Ventilation in a Mine When Firing Shots

Recalls the remarkable McAllister experience, in Kansas mines—Essential requirement to prevent explosions—Can the theory of slack ventilation be considered practicable?

THE citation of a recent mine explosion as the result of slack ventilation, in a mine when 36 miners fired their shots, as given by a Kentucky engineer, *Coal Age*, July 20, p. 95, recalls the very remarkable experience of Alexander McAllister, a Kansas miner, who strongly advocated the theory of closing the mine to the circulation of air when firing shots.

The letters recounting Mr. McAllister's experience, in this regard, as published in an early volume of *Coal Age* (Vol. 2, pp. 692, 838, 881; and Vol. 3, p. 24) gave rise to a lengthy discussion of the question of reducing mine ventilation, at the time of shot-firing.

Arguments Advanced in Favor of Suspending Ventilation

It was argued, in support of the theory, that the suspension of ventilation, at a time when a large number of shots are fired in a mine, creates an extinctive atmosphere, through the depletion of the oxygen content of the air, owing to its dilution by the gases produced in the firing of the shots.

For this reason, it was claimed that, under such conditions, an explosion could not occur. In support of his conclusion, the narrator described an experiment that he performed in a mine to prove the correctness of his theory. The wonder is that the man survived to tell the story.

Remarkable Experiment to Prove Theory Correct

Mr. McAllister states (Vol. 3, p. 25) that, for the purpose of this experiment, he arranged a series of 27 shots, in a mine, and placed a 25-lb. keg of blasting powder, with fuse attached and covered over with fine coal dust, at the face of the workings.

Having closed the doors, at the top of the shaft, so as to completely shut off the ventilation in the mine, with the aid of two others as intrepid as himself, the experimenter and his assistants lighted all the shots and the fuse attached to the keg of powder and retired to a safety hole they had prepared in the mine.

The account states that no explosion occurred save for a slight one following the firing of the fourth shot. That, however, was only local, not being propagated, though conditions were favorable for its extension could the mine atmosphere have supported the combustion.

Experiment Supports Claim of Reducing Circulation

The argument and the evidence corroborating it appear plausible could we be assured of one essential feature; namely, that there will always prevail a sufficiency of the extinctive gases to render the mine atmosphere incapable of originating and supporting an explosion.

Just here it must be remembered that a danger point of high explosibility must be reached and passed, before immunity from explosion can be assured. The practicability of this theory is, I fear, still entertained by many mining men. To such an extent, a few years ago, did the theory gain ground that the late H. M. Wilson, then chief of the Associated Companies, wrote an article disparaging the idea.

The Weak Point Exposed

As I have already intimated, the weak point of the theory is the assumption that the mine atmosphere will always become non-supporting of explosive conditions, in the region where the shorts are being fired. Little consideration seems to have been given, also, to the relatively larger air volume of the mine, in comparison to the shot-firing area.

Neither does it seem to have been regarded that an extinctive condition in the mine air is cumulative, and is only reached after passing through an extremely explosive condition. If I am not mistaken there is far greater danger in a succession of shots than when the same shots are fired simultaneously.

For example, when shots are fired simultaneously the condition presented is analogous to that of firing a single shot. The occurrence of an explosion assumes both an explosive atmosphere and sufficient heat for its ignition. In the firing of a single shot the gaseous products and the heat appear simultaneously; but, before the dilution of the gases with air can form an explosive mixture, the heat required for its explosion has dispersed and been lost. On the other hand, when successive shots are fired, the flame and heat of a following shot are projected into an explosive mixture formed by the dilution of the gases of preceding shots and an explosion results.

In closing, let me say that, while modern ventilation does not make mines free from explosions, it must be admitted that such occurrences are less frequent and less devastating than in years past. Inadequate ventilation in the early history of coal mining did not prevent explosions, which were often more widespread and devastating than those of more recent occurrence.

Washington, D. C. I. C. Parfitt.

Misapplication of Principles in Mine Timbering

Systematic timbering an innovation—Often followed blindly—Its object—Purpose of setting posts in mines.

I WAS deeply interested in reading the excellent letter of our friend, John Rose, who writes on "Safety in Timbering at the Working Face," *Coal Age*, July 6, p. 18. He has very ably enunciated and emphasized a practical principle in this most important phase of coal mining.

Mr. Rose has drawn attention to the fact that the method of timbering each working face must necessarily depend on the particular conditions of roof and floor, in that place, and that no fixed rule will apply to all the conditions that so frequently occur, even in different sections of the same mine.

Roof and Floor Conditions Never Found Uniform

Others may have had a different experience from mine; but I have never yet seen or worked in a mine, either drift, slope or shaft, where the conditions of roof and floor were uniform throughout. I am reminded of this, particularly by the amusing way in which Mr. Rose narrated one incident that showed clearly the need of adapting the method of timbering employed to the conditions in hand.

The anecdote illustrated in a forcible manner the point that has impressed itself on my mind and is the chief point that I wish to emphasize here. In coal mining, as in any other industry, any new method that may be proposed as the result of study and experiment, becomes an innovation that must be demonstrated, in order to prove its effectiveness in a particular case.

Innovation in Coal Mining

Now, systematic posting may be regarded as such an innovation in the mining of coal. As generally understood, it means the standing of posts at regular intervals, in prescribed loca-

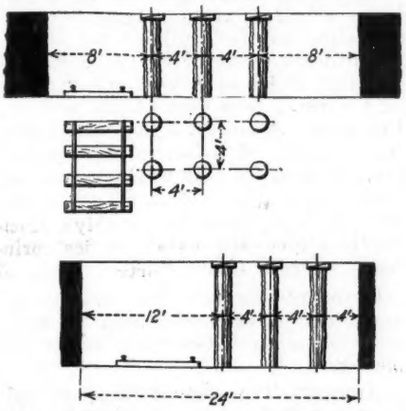
tions, and has little regard to the ever changing conditions in the roof, which every practical miner knows must be considered.

Foremen Often Follow Blindly a Method Proposed

As in the case cited, an innovation of this kind is often blindly followed by mine officials who fail to give a thought as to its adaptation to the particular conditions with which they have to contend. In their minds, the systematic setting of posts at the working face is a plan of universal application that they are eager to adopt.

Not to be misunderstood, let me say here that systematic timbering, under uniform conditions of roof and floor, has many good points. It eliminates any bad judgment, or lack of experience, on the part of the miner and, more particularly, his proneness to postpone the setting of needed posts at the working face.

The main object of systematic timbering in rooms is to distribute and



TWO SYSTEMS OF POST TIMBERING

equalize the roof pressure and thereby strengthen the roof in a miner's working place. By way of illustration, I have prepared two sketches, each of which is an example of systematic timbering in a breast.

The More Effective System

In the figure, the section shown above represents three lines of posts, set 4-ft. apart in the center of the breast, which is the weakest spot in the span across the opening, assuming a uniform roof condition. This is analogous to setting a center post under a collar that shows signs of taking the weight. In the lower half of the figure, the three posts are set at equal distances apart and a like distance from the rib, on the gob side of the breast.

Although in each case the timbering is systematic, the second arrangement is not as effective as the first, since there is a greater width of unsupported roof over the roadway when the timbers are set to one side of the center of the breast. This second arrangement has a tendency to divert pressure from the supporting pillars to the unsupported span of roof above the road.

It would naturally be regarded as a foolish question and one that would reflect on the intelligence of the man were we to ask a coal miner, What are the uses of a post? I believe, however, if this question was propounded to a number of coal miners their answers would be far from satisfactory. Most of the replies would be, "To keep the roof up," though every miner knows that when the coal is taken out from a large area no amount of posting will maintain the roof.

Real Purpose of Standing Posts Under Mine Roof

While such an answer is correct, in a general sense, it does not reveal the true purpose of standing a post. This, to my mind, is to support some local condition with which any experienced miner is well familiar and needs no explanation.

When such a condition is discovered in a man's place the only practical and safe method to pursue is to make the roof secure by posting. The timber must be stood where it will serve the best purpose, irrespective of whether or not it will conform to a system and be in line with other posts.

Timber Reveals Roof Pressure

Another purpose of setting post timbers is to provide a means that will indicate the degree of pressure due to the overburden. A post serves this purpose, particularly in retreating work when robbing pillars and stumps where roof falls are of frequent occurrence making the work dangerous. At such times it is well to set a few posts as tight as possible that they may show quickly any sudden increase of pressure.

In systematic timbering, posts serve the purpose of distributing the pressure more evenly; but this method of timbering is adapted only to a uniform roof condition. In such cases, it will be found the safest and most economical method in the end. However, it does not and must not form an excuse for or warrant any inattention to the daily and hourly inspection of all working places.

I. C. Parfitt.

Washington, D. C.

Inquiries Of General Interest

Flow of Water in Pipes Under Equal Heads

With Like Velocity, Sixteen 3-in. Pipes Will Carry the Same Water as One 12-in. Pipe—Under Equal Head, Thirty-two of the Smaller Pipes Will Be Required

MAY I ask *Coal Age* to kindly settle a disputed question regarding the number of 3-in. pipes that will be required to carry away the same quantity of water as a single 12-in. pipe. Where the question originated I do not know; but it has been knocking around hereabouts some time and has caused difference of opinion among those who are studying to fit themselves for examination.

It is argued by some that a pipe will carry an amount of water in proportion to its sectional area, which varies as the square of its diameter. On this basis, it is claimed that, since the diameter of a 12-in. pipe is four times that of a 3-in. pipe, the former will carry $4^2 = 16$ times the amount of water carried by the latter. In other words, it will require sixteen 3-in. pipes to carry the same amount of water as one 12-in. pipe.

On the other hand, a few claim that such is not the case. Although they have not been able to give a satisfactroy explanation, they say that this question was asked a long time ago in a mining examination and, to the best of their recollection, a different answer was given. It would seem that the only way to settle this dispute is to appeal to *Coal Age* to answer the question again and explain the reason why more than sixteen 3-in. pipes will be required to discharge the same amount of water as a single 12-in. pipe.

Steubenville, Ohio. Student.

We recall that this question was asked in a Pennsylvania examination, a few years ago. Very probably it was answered in *Coal Age*, at that time. While it is true that a pipe will carry water in proportion to its sectional area, that condition assumes that the velocity of the flowing water is constant. In other words, for a constant velocity, the flow of water in a pipe varies as the square of its diameter and sixteen 3-in. pipes would then be equivalent to one 12-in. pipe.

A more practical view of the question, however, is to consider the flow of water in these pipes as under a constant head or pressure; and, in that case, owing to the frictional resistance in the pipes, a constant head will not produce the same velocity or quantity, in pipes of different diameter.

When the head is constant the pressure producing the flow is likewise constant. Therefore, we write the formula for pressure (p), producing a quantity (q), flowing in a pipe having a sectional area (a), perimeter (o) and length (l); thus:

$$p = \frac{klo q^2}{a^3}$$

Then, striking out the constant quantities p, k, l, we find that q^2 varies directly as a^3 and inversely as o; and we write,

$$q^2 \text{ varies as } \frac{a^3}{o}; \text{ or } \frac{(d^2)^3}{d} = \frac{d^6}{d} = d^5$$

In other words, q^2 varies as the fifth power of the diameter of the pipe, for a constant head. Or, the quantity of the flow, under a constant head, varies as the square root of the fifth power of the diameter of the pipe.

Finally, applying this rule to the case in hand, since the diameter of a 12-in. pipe is four times that of a 3-in. pipe, the quantity of water flowing in the former, under a constant head, is $\sqrt{4^5} = \sqrt{1,024} = 32$ times the quantity that will flow in a 3-in. pipe, under the same head. Therefore, in practice, the head remaining constant, it will require thirty-two 3-in. pipes to discharge the same quantity of water as one 12-in. pipe.

Examination Questions Answered

Illinois Mine Managers' Examination, Springfield, July 17, 18, 1922

(Selected Questions)

QUESTION—*Taking the weight of a cubic foot of air as 0.086 lb., what will be the weight of air in a shaft 15 ft. in diameter and 250 yd. deep?*

ANSWER—The cubic contents of this shaft is $3 \times 250\ (0.7854 \times 15^2) = 132{,}534$ cu.ft. The weight of air filling this shaft and having a density of 0.086 lb. per cu.ft. is, therefore, $0.086 \times 132{,}534 = 11{,}398$ lb., or 5.7 tons, nearly.

QUESTION—*If 55,000 cu.ft. of air is passing through a circular shaft 10 ft. in diameter, what is the velocity of the current, in feet per second?*

ANSWER—The sectional area of this shaft is $0.7854 \times 10^2 = 78.54$ sq.ft. Dividing the given air volume by 60 gives the circulation per second, and that quotient divided by the area gives the velocity of the air, in feet per second; thus $55{,}000 \div 60 = 916.7$ cu.ft. per sec. Then, $916.7 \div 78.54 = 11.67$ ft. per sec.

QUESTION—*There is 10,000 cu.ft. of air passing through an airway having a rubbing surface of 24,000 sq.ft. and a sectional area of 20 sq.ft. What is the water gage producing this circulation?*

ANSWER—The water gage, in this case, is given by the formula,

$$w.g. = \frac{ksq^2}{5.2a^3} = \frac{0.00000002 \times 24{,}000 \times 10{,}000^2}{5.2 \times 20 \times 20 \times 20} = 1.15 \text{ in.}$$

QUESTION—*How can a mine foreman tell whether or not there is any obstruction in an airway without traveling through it?*

ANSWER—Assuming that the ventilating fan is running at its usual speed, a decrease in the quantity of air in circulation, accompanied by an increased water-gage reading, on the fan drift, would point to a probable obstruction of the air current, at some point in the mine. Such a condition may even cause the fan to run at a slightly increased speed, because of the decreased quantity of air flowing through the fan and a lesser amount of work absorbed by friction in its passage, leaving more power effective in turning the fan. This assumes that the power applied to the fan shaft remains constant.

QUESTION—(*a*) *An entry is 6 ft. wide at the top, 14 ft. wide at the bottom and 6 ft. high, what is the area?* (*b*) *What is its perimeter?* (*c*) *How many square feet of rubbing surface in a part of this entry one-half mile long?*

ANSWER—(a) The average width of the entry is $\frac{1}{2}(6 + 14) = 10$ ft. and the sectional area is, therefore, $6 \times 10 = 60$ sq.ft.

(b) The spread of the two sides is $14 - 6 = 8$ ft., making the half spread 4 ft. Therefore, the length of one side, for a height of 6 ft., is $\sqrt{6^2 + 4^2} = 7.21$. The total perimeter of the airway is, therefore, $6 + 14 + 2 \times 7.21 = 34.42$ ft.

(c) A half-mile is 2,640 ft. and the rubbing surface, for this length of airway, is $2{,}640 \times 34.42 = 90{,}868.8$ sq.ft.

QUESTION—*What is the horsepower of the air when 70,000 cu.ft. per min. is passing at a water gage of 1.7 in.?*

ANSWER—The pressure corresponding to a 1.7-in. water gage is $5.2 \times 1.7 = 8.84$ lb. per sq.ft. The horsepower on the air is, therefore,

$$H = \frac{Qp}{33{,}000} = \frac{70{,}000 \times 8.84}{33{,}000} = 18.75 \text{ hp.}$$

QUESTION—(*a*) *State for what purpose electricity is used in connection with coal mining.* (*b*) *Name the four electrical units.*

ANSWER—(a) In coal mining, electricity is used to supply power to operate coal-cutting machines, drills, ventilating and booster fans, pumps, and engines for hoisting and hauling coal and men. Electricity is also used for lighting, and signalling by bells or telephones.

(b) The four common electrical units are the volt, measuring the pressure; the ampere, measuring the quantity or volume of the current; the ohm, measuring the resistance of the conductor; and the watt, measuring the electrical power.

QUESTION—(*a*) *What is the breaking strain of a good steel hoisting rope 1¼ in. in diameter?* (*b*) *How will you find the safe working load for this rope?*

ANSWER—(a) The breaking strain of a 1-in. cast-steel, 6-strand, 19-wire, hoisting rope is 32 tons. This is used as the basis for calculating the breaking strain of similar ropes of different diameters, since the strength of similar ropes varies as the square of their diameters. Thus, the breaking strain of a 1¼-in. rope of this kind is $34 \times 1.25^2 = 53.125$ tons.

(b) The safe working load of a rope must be determined by the conditions under which the rope is used. For example, when hoisting in a vertical shaft it is common practice to use a factor of safety varying from 5 to 10, depending on the depth of the shaft. For a depth of 75 or 80 yd., a factor of safety of 5 may be used, making the safe working load then $53.125 \div 5 = 10.6$ tons. Again, at a depth of 1,000 ft., a factor of safety of 8 may be used, making the safe working load, in that case, $53.125 \div 8 = 6.6$ tons. In each case, however, the working load should include the weight of the rope itself, hanging in the shaft.

QUESTION—*Explain how you would arrive at the cost for hauling the coal, in a mine of which you might be manager.*

ANSWER—The cost of hauling coal in the mine, from the working face to the shaft or slope bottom, must be based on the output or daily tonnage and the number of locomotives used on the main road and for gathering the cars at the working face. This will determine the expense for wages of motormen and tripriders, to which must be added the wages of any trappers, trackmen and timbermen employed on the haulage roads. An estimate must also be made of the cost of maintenance, including all supplies and labor required in the upkeep of the machines and power line.

In addition to this, there must be added the cost of power, if purchased; or the wages of the men employed in the power plant together with the cost of supplies and maintenance of the boilers, engines, generators and machinery forming the equipment of the power plant, making due allowance for the power consumed for other purposes, in the same period.

Finally, dividing the total cost of labor, supplies and maintenance, by the tonnage, estimated on a period of a month, will give the average cost of haulage, per ton of coal mined. This assumes that the overhead charges include depreciation, interest, and insurance and are not included in the cost of haulage.

Output of Bituminous Coal in United States in 1921 Was 415,921,000 Tons; Tonnage Per Man Higher

Production of bituminous coal in the United States in 1921, according to final statistics issued by the Geological Survey, totaled 415,921,000 net tons. The Survey's preliminary estimate, published Jan. 7, 1922, or nine months ago, was 407,000,000 tons, which was an error of 2.2 per cent. Several interesting features of these statistics, pointed out by the Survey, are given here in full.

The mines included in these figures, the Survey states, do not embrace the output of country banks and of some wagon mines. They include, however, many small operations that fall within the definition of wagon mines but that operate steadily year after year. The tonnage not included, it will be agreed, would amount to little in a year of acute depression such as 1921. Were statistics available for the small mines not included, the total output would be raised by not much over 1,000,000 tons.

The value of the bituminous coal produced in 1921 was reported to be $1,199,000,000, as against $2,109,000,000 in 1920. The average value per ton f.o.b. mines declined from $3.75 in 1920 to $2.89.

Contrary to what might have been expected, the number of men employed increased in 1921. There was less work but more men to share it. The total employed at bituminous mines was 663,754, an increase of 24,000 men. This figure is not the average number of men at work at any one time, including the weeks or months when the mine may have been shut down; it is rather the number of men on the working force of the mine when it was in operation. Since the effect of the business depression upon the demand for coal did not become acute until February or March, the great majority of commercial mines got at least a few weeks' operation during the year, and their working forces were thus counted in the total number of employees. By August, 1921, so many mines had closed down that the total number of men drawing wages in one week had fallen to somewhere between 500,000 and 520,000.

The increase in number of employed was confined to the tonnage workers. The number of daymen decreased in almost every state. The total number of surface employees dropped from 110,000 to 96,000, and of underground daymen from 174,000 to 168,000.

This reduction in number of day workers was one cause of a remarkable increase in the output per man per day. In 1920 the average production per man employed per day worked was 4 net tons, a new record for the bituminous industry. Yet in 1921 the average rose to 4.20 tons, an increase of 5 per cent. Other factors contributing to this increase, in addition to the change in proportion of day workers, were the natural tendency to restrict development work in a time of depression, an apparent tendency of the miners to work harder when running time is poor and, most important, a remarkable increase in the percentage of machine-mined coal. Average productivity in a machine mine ranges from 20 to 30 per cent above that in a mine where coal is undercut by hand or shot from the solid. Now in 1921 the proportion of coal mined by machines was 65.6 per cent against 59.8 per cent in 1920 and 55.9 in 1918.

Higher productivity per day tended to reduce the number of days worked. The average time worked by all of the bituminous mines was 149 days, the lowest in the history of the bituminous industry. In the calculation of this average, as in earlier publications of the Geological Survey, the size of each mine is taken into account, and each affects the average in proportion to the number of men it employs. The days reported are tipple days, the best single measure of productive time. The use of tipple days gives rise to a tendency to understate the time where repair work or development is carried on underground when the tipple is not working. As this condition was more prevalent in Utah and some other districts during 1921 than formerly, the average for the year is not strictly comparable with earlier years, although the form of question used was exactly the same.

Examination of the figures by states shows that the business depression was felt in every important coal-producing region. Omitting the states of insignificant tonnage, such as California, Georgia and North Carolina, the lowest number of days worked was 112, in Arkansas, and the highest, 196, in Michigan. No important producing state reached the 200-day mark. In Illinois the average was 152 days; in Kentucky, 152; in Pennsylvania, 151; in West Virginia, 149; and in Alabama, 166.

STATISTICS OF PRODUCTION OF COAL IN THE UNITED STATES IN 1921

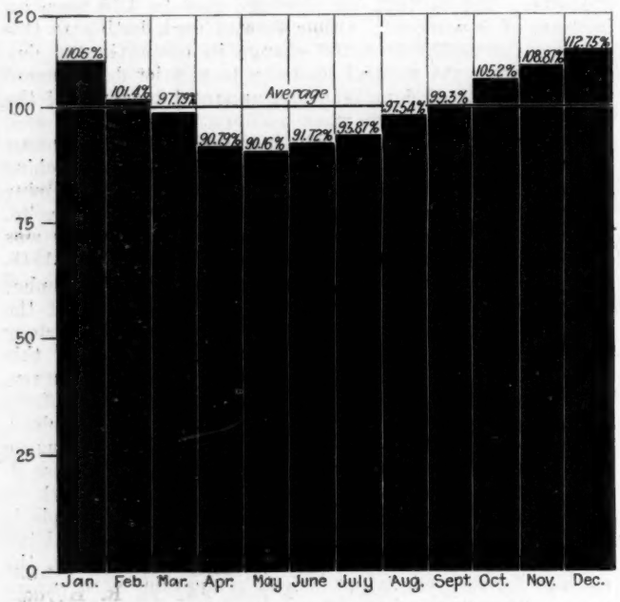
(Exclusive of Product of Wagon Mines)

State	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders, etc. (a)	Underground — All Others	Surface	Total	Av. Days Worked
Alabama	11,834,609	313,125	292,807	128,358	12,568,899	$38,713,000	$3.08	15,304	5,869	4,636	25,809	166
Alaska	71,999	3,005	1,813	.....	76,817	496,000	6.46	104	79	218	401	244
Arkansas	1,174,584	19,477	33,716	.....	1,227,777	5,360,000	4.37	2,315	848	453	3,616	112
California, Idaho and Oregon	19,015	13,305	6,525	.....	38,845	181,000	4.66	35	48	58	141	149
Colorado	8,408,613	399,816	253,718	60,613	9,122,760	32,377,000	3.55	8,456	3,450	2,623	14,529	164
Georgia	18,755	373	1,979	12,708	33,815	171,000	2.14	59	26	51	136	183
Illinois	64,174,112	3,371,482	2,057,169	.....	69,602,763	190,986,000	2.74	60,466	25,043	9,922	95,431	152
Indiana	19,116,259	610,620	592,630	.....	20,319,509	52,269,000	2.57	20,472	8,460	3,755	32,687	128
Iowa	3,891,368	521,465	118,559	.....	4,531,392	17,256,800	3.81	7,597	2,815	974	11,386	148
Kansas	3,250,299	111,448	104,894	.....	3,466,641	13,333,300	3.85	5,453	1,538	1,216	8,207	137
Kentucky	30,096,762	802,744	527,257	161,507	31,588,270	85,092,600	2.69	28,737	12,996	8,788	50,521	152
Maryland	1,743,710	56,734	27,296	.....	1,827,740	6,602,000	3.61	2,964	978	726	4,668	120
Michigan	1,058,789	11,354	71,572	.....	1,141,715	5,555,000	4.87	1,346	622	244	2,212	196
Missouri	3,209,496	242,136	99,989	.....	3,551,621	13,915,500	3.92	5,141	1,830	1,584	8,555	166
Montana	2,492,344	115,538	126,076	.....	2,733,958	8,921,600	3.26	2,396	1,064	718	4,178	143
New Mexico	2,326,034	34,754	62,259	30,435	2,453,482	9,585,000	3.91	2,735	1,120	722	4,577	150
North Carolina	20,000	.....	3,438	.....	23,438	135,000	5.76	38	7	15	60	300
North Dakota	700,950	135,550	28,403	.....	864,903	2,329,500	2.69	566	209	289	1,064	194
Ohio	29,788,393	1,559,953	594,243	187	31,942,776	84,686,500	2.65	33,143	11,555	7,087	51,785	134
Oklahoma	3,208,381	25,559	128,683	.....	3,362,623	15,546,000	4.62	5,000	2,425	1,429	8,854	141
Pennsylvania (bituminous)	102,025,340	4,315,590	2,552,372	7,120,640	116,013,942	322,538,300	2.78	119,818	44,404	26,421	190,643	151
South Dakota	450	7,069	34	.....	7,553	21,200	2.81	43	.....	.....	43	129
Tennessee	4,194,364	88,199	123,730	54,033	4,460,326	14,932,000	3.35	6,061	2,500	1,786	10,347	154
Texas	947,589	2,691	22,559	.....	972,839	2,563,600	2.64	1,989	609	294	2,892	139
Utah	3,668,661	74,705	73,365	262,053	4,078,784	13,662,000	3.35	2,450	1,041	931	4,422	151
Virginia	6,818,178	152,729	98,950	422,521	7,492,378	22,947,700	3.06	5,751	4,056	2,115	11,922	166
Washington	2,274,202	59,644	88,585	6,291	2,428,722	9,787,000	4.03	2,241	1,245	848	4,334	159
West Virginia	68,655,196	2,983,061	808,609	340,130	72,786,996	206,661,500	2.84	53,801	30,951	17,098	101,850	149
Wyoming	6,875,284	103,495	221,887	.....	7,200,666	23,358,500	3.24	4,789	2,231	1,464	8,484	167
Total bituminous	382,063,736	16,135,621	9,123,117	8,599,476	415,921,950	$1,199,983,600	$2.89	399,270	168,019	96,465	663,754	149
Pennsylvania (anthracite)	77,901,110	2,812,551	9,759,790	.....	90,473,451	452,305,000	5.00	73,977	42,840	42,682	159,499	271
Grand total	459,964,846	18,948,172	18,882,907	8,599,476	506,395,401	$1,652,288,600	$3.26	473,247	210,859	139,147	823,253	173

(a) Includes also shotfirers. Statistics compiled by L. Mann, U. S. Geological Survey, Sept. 23, 1922.

Coal Consumption by Utilities at Peak in December; May Is Low Month

Coal consumed by public utilities during 1919, 1920 and 1921 averaged 2,886,200 net tons per month. Using this as 100 per cent, the average consumption rate fluctuated from a high of 112.75 per cent in December (January 110.6 per cent) to a low of 90.16 per cent in May, the spring and summer months falling below the average and the autumn and winter period exceeding it, as shown in the accompanying diagram. The April-September average consumption was 46.95 per cent of the total, October-March consumption averaging 53.05 per cent. Some of this variation, of course, is due to the seasonal dullness in general industry during this spring and summer.



COAL CONSUMED BY PUBLIC UTILITIES

Diagram shows ratio of each month's average consumption figure during the last three years to total monthly average.

More Mine Fatalities in August, 1922, Than A Year Ago but Fewer Than in July

Accidents at coal mines during August, according to reports received by the U. S. Bureau of Mines from state mine inspectors, resulted in the death of 98 men, of whom 96 were killed at bituminous mines and 2 at anthracite operations. The total output of coal, including a small amount of steam sizes of anthracite, mostly from river dredges, was 25,776,000 tons. Thus the fatality rate for August was 3.80 per million tons as against 3.69 for the corresponding month last year. The average fatality rate for August over a nine-year period (1913-1921) is 4.15. For bituminous mines alone the August rate was 3.75, as compared with 3.39 for August one year ago and an average rate of 3.78 for the nine years 1913-1921. Thus for bituminous mines alone and for bituminous and anthracite mines combined, the August, 1922, rate is slightly higher than for the corresponding month last year but lower than the nine-year average rate for the same month. In July last there were 74 fatalities, or 4.31 per million tons produced.

During the first eight months of the current year accidents at coal mines have killed 1,025 men, 159 at anthracite mines and 866 at bituminous mines. During the corresponding period last year there were 1,318 fatalities, of which 365 were at anthracite mines and 953 at bituminous mines. For each million tons of coal mined the current fatality rate is 4.07 as against 4.09 for the eight-month period last year. For bituminous mines alone this year's rate is 3.77 as against 3.66 last year; for anthracite mines alone the 1922 rate is 7.16 as compared with 5.90 one year ago.

COAL-MINE FATALITIES DURING AUGUST, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground													Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total	1922	1921
Alabama	7		2									1	10													10	11
Alaska																										0	0
Arkansas																										0	1
Colorado	2							1					3													3	4
Illinois	6		2										8													8	22
Indiana	1		1									2	4													4	3
Iowa	2												2													2	2
Kansas																										0	0
Kentucky	2	1	4					1					8													8	6
Maryland																										0	0
Michigan	1												1													1	0
Missouri																										0	1
Montana	2		1										3													3	0
New Mexico	1		1										2													2	0
North Dakota																										0	0
Ohio	5												5													5	10
Oklahoma	1												1													1	3
Pennsylvania (bituminous)	10	1	3					2					16											1	1	17	25
South Dakota																										0	0
Tennessee		1											1													1	4
Texas																										0	0
Utah																										0	2
Virginia																										0	1
Washington	2							1					3												1	3	1
West Virginia	13		6	1		1		1					22						1	2	1		1	1	6	28	21
Wyoming																										0	0
Total (bituminous)	55	3	20	1		1		6				3	89						1	2	1		1	2	7	96	117
Pennsylvania (anthracite)			1										1								1			1	1	2	38
Total, August, 1922	55	3	21	1		1		6				3	90						1	2	2		1	2	8	98	
Total, August, 1921	68	11	24	3	1	27	1	5		1	2	3	146		1			1	1	3			2	2	8		155

New Coal Legislation Presents Opportunity to Air Causes of Instability in the Industry

By Paul Wooton
Washington Correspondent of *Coal Age*

The coal industry is waiting in suspense to see what the new Federal Fuel Distributor will do and what policies may be adopted by the Fact-Finding Commission. The feeling in official circles is that the predominant sentiment within the coal industry is hostile to both of these agencies. There are many evidences of a tendency to hold back and oppose, although there are many coal operators who are waiting with open minds and some who see in these agencies new opportunities to improve the industry.

The consensus of opinion in Washington is that, everything considered, the coal trade is getting off easy with the dose of legislation it is receiving after such a major disturbance. Some operators think the industry is particularly fortunate in that the spoon is in the hands of Secretary Hoover and Fuel Distributor Spens. When it is considered that the trouble within the industry practically wiped out the nation's coal reserve and nothing more serious than this legislation has followed, there is reason for the coal trade to be thankful, some think.

The public was forced to suffer inconveniences and real annoyance and was forced to play the galling rôle of bystander. Despite all that there was no great demand for even this legislation. Many are surprised that the public did not insist on something more drastic. The feeling in official circles is that the coal industry should accept this legislation in good grace and do all it can to co-operate fully with each of the agencies set up by the new legislation. In this connection it may be said that officials have had striking evidence of friendliness from the smokeless operators. If all groups would do as much, there would be every reason to believe, it is said, that the situation could be met and all industries allowed to obtain the fuel requirements of the increasing tide of prosperity.

Obstructive Tactics May Prove Disastrous

If, on the other hand, the coal industry starts to fight these agencies with injunctions or suits to test the constitutionality of the laws, it is believed nothing constructive will have been accomplished and that the industry probably will bring down upon itself a form of regulation which will soon place it in the public-utility class. It is contended that the purpose of this legislation is a legitimate function of the government, and if by any chance Congress may have exceeded its power, there is every reason to believe that the strength could be mustered to increase its power.

It is certain that Secretary Hoover and Mr. Spens will not use the powers which have been vested in them any more than they have to. If all will pull together, at least until the lake program has been filled, it is believed that the situation will be left largely to the good sense and the self-restraint of the coal producers. An evidence that Mr. Hoover does not want to use any more power than is necessary to handle the situation is the fact that he recommended for the post of Fuel Distributor a man who was connected with the Food Administration. The Food Administrator had almost unlimited authority. Very little of that authority had to be exercised. Mr. Spens was one of the principal officials who helped carry out that policy. With that training Mr. Hoover undoubtedly selected him as a man who would react in the same way in the matter of coal distribution.

While fact-finding commissions have a reputation of being possessed with an immense amount of inertia and of being distinguished principally by their ability to compile dry reports of great length, there is reason to think that this commission may be an exception. At least the commission gives the coal industry a chance to obtain some of the constructive things it long has been striving to get. Has there ever been a better opportunity to place an entering wedge to effect the amendments to the Sherman law which the coal industry needs so badly?

If coal operators think something should be done in the matter of assigned cars, an opportunity now is presented to obtain a recommendation in line with their views. If anyone has an idea as to improvements in reaching wage agreements or for meeting the wagon-mine problem, here is the chance of a lifetime to convince a body vested with all the prestige of a formal act of Congress. A chance is offered to air the thousand and one causes for instability in the industry. A chance is presented to co-operate with the consumers and with the carriers on such things as the promotion of storage. The government has created an open forum. Many friends of the coal industry believe it should be thronged for the next several months by men within the coal industry who have constructive ideas. An unprecedented opportunity is given to procure a friendly hearing.

Purchasing Agents Adopt Coal Policy to Facilitate Equitable Distribution

Following the conference on coal held by Secretary Hoover on Sept. 15 at Washington, which was attended by Mark Kuehn, chairman of the Fuel Committee of the National Association of Purchasing Agents; E. H. Hawkins, former chairman of that committee, and H. R. Heydon, secretary of the association, the members of that organization were requested to adopt as the coal policy of the association the following:

(1) Buy only for current consumption.

(2) Adjust deliveries on contract, so that they will not exceed current consumption.

(3) Play the game according to our respective actual requirements and not try to beat our neighbor to it.

It was stated that much could be accomplished through the co-operation on the part of all purchasing agents. Every member was mailed a declaration of the coal policy of the association and asked to buy coal only in sufficient quantities to meet current consumption and "thus voluntarily to assist in ameliorating the coal situation by preventing a fictitious demand that will increase prices and prolong the period of coal shortage, thereby affording an opportunity to householders to obtain supplies of coal which are so desperately needed."

Should this voluntary method fail to accomplish its purpose, the declaration says, it is probable that industry generally will be asked to cease production or operation for a period of two weeks. It therefore seems essential that all industry should immediately co-operate in this present coal policy.

Bethlehem Corporation Gets Permanent Injunction Against District Union

In a lengthy decision handed down by Judge J. N. Langham at Indiana, Pa., the temporary restraining order obtained by the Bethlehem Mines Corporation against District No. 2, United Mine Workers of America, John Brophy, its president, and others, is made permanent and absolute. The plaintiff coal mining company employees are non-union. Apparently they were satisfied to remain at work during the strike period when organizers went into the district and, it is alleged, attempted to coerce the miners into joining the strike. An order restraining the union was obtained and Judge Langham now makes it imperative that the union organizers remain out of the field and perpetually enjoin the defendants.

Miners Win First Skirmish in Herrin Case

Lawyers of the United Mine Workers of America have won a point in the arrangements for the trial of the men the grand jury indicted for participating in the Herrin massacre of June 22. Judge D. T. Hartwell decided late last week that the forty-eight men held under a blanket indictment for the death of Howard Huffman, one of the slaughtered non-union strip miners, shall be tried first. Attorney General Brundage, in charge of the prosecution, argued that Otis Clark, the first man indicted for murder, ought to be tried first. He feels that it will be more difficult to get a conviction of forty-eight men than one, since more local prejudices will be involved and the job of the jury will, by that sign, be more difficult.

The miners wished to postpone the first case until after the first of the year, in order, they said, to interfere as little as possible with coal production by the large number of men involved in the case and to permit the preparation of evidence. The prosecution wanted to start the trials at once. Judge Hartwell compromised on this point by setting the date for Nov. 13.

Though the grand jury returned 214 indictments in all, they involved but seventy-nine men, for most of the men were indicted under several charges. Practically all of the seventy-nine are now in the law's hands either as prisoners charged with murder, eight of whom are in jail after bonds had been refused, or released under bonds ranging from $20,000 down to $1,000.

Would Compel Labor Unions to Incorporate

A bill for the compulsory incorporation of labor unions and compulsory arbitration of industrial disputes has been introduced in the House by Representative Fairchild, of New York, and referred to the Committee on Labor, which will consider it at the December session of Congress.

The measure provides that all labor unions be enrolled as "national unions" under the Department of Labor, for which purpose the bill would create the office of Commissioner of Enrollments, with an annual salary of $7,500. Employers of more than 25 workers also would be obliged tc enroll. A penalty in the form of a tax of $5 a year would be levied upon all members of unions not enrolled in the national union. The national unions, to be organized according to occupations, would be obliged to write into their bylaws a provision against disturbing the regular commercial life of the country and agree to submit all controversies which cannot be composed by private negotiation to the courts of the United States and to accept their decision on final appeal without further controversy. A violation of the latter clause would be considered a misdemeanor punishable by a fine of $5 a day and no employer would be able to hire a worker not a member of a national union on penalty of fine of $5 a day for each outside worker employed.

First-Aid Contest at Norton, Va., Shows High Proficiency of Contestants

Some remarkably high scores were made at the fourth annual first-aid meet of the Virginia Coal Operators' Association, held at the ball park in Norton, Va., Sept. 16, 1922. Four teams tied for first place with a score of 100 per cent each. In working off this tie Roda team No. 2 took first prize, Norton team No. 1 took second, Osaka team No. 1 took third, and Wilder team No. 1 took fourth. The lowest percentage won by any team entered in the contest was 91.

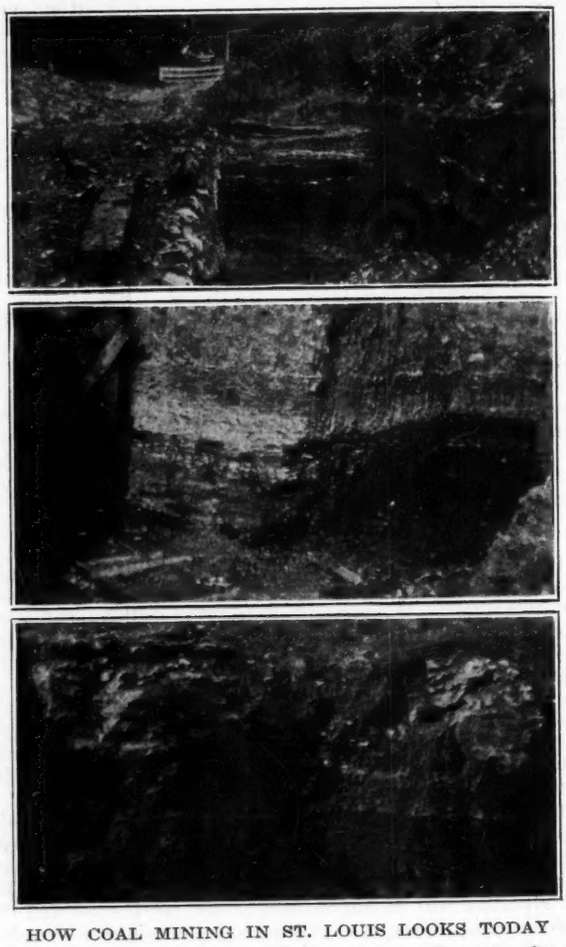
Many prizes valuable from both sentimental and intrinsic standpoints were distributed. In addition to medals these consisted of various articles from cash to gold watches, shotguns, overcoats, cigars, hams, cans of carbide, sets of table silver and even baby carriages. Souvenir watch fobs also were distributed.

First-aid meets are valuable from many standpoints, and the benefits resulting from these competitions are shared not alone by the contestants, for not only do the various teams meeting in friendly rivalry become more acquainted in the treatment of the injured but they become acquainted with each other and the members of other teams. A bond of common sympathy is thus fostered. Even the physician judges and the spectators derive benefit from these meets, and it would be well if each mining community in the land could have its team and its annual first-aid contest.

After Many Years' Rest Coal Is Being Mined Within the City Limits of St. Louis

BY E. J. WALLACE

A coal mine has been opened within the city limits of St. Louis. This is the first coal mine in many years to be operated commercially within the city limits. It is in the Clifton Heights district, off Southwest Avenue, where a 4-ft. seam has been opened up with slopes to work under on extensive acreage. The coal is soft and is of fairly



HOW COAL MINING IN ST. LOUIS LOOKS TODAY

In the southwestern part of the city this 4-ft. bed under an extensive acreage has been opened with slopes whose openings are shown in the top and center pictures. The outcrop, under 6-ft. of slate and dirt, is shown at the bottom. Further into the hill the roof over this seam is said to be of hard rock. Most of the coal in St. Louis was mined out in the days "befo' de wah."

good quality. It is estimated that there is a big acreage that will produce several thousand tons. It is easily mined, with a slate roof near the outcrop and a hard rock roof farther in.

This is one of the few acreages that were not mined out in the years from 1830 to 1860 prior to the building of the Eads Bridge in St. Louis. All the coal used in the city at that time was mined in the southwestern parts of the city. One of the miners of that period is still living today. He is John Maule, of Belleville. The two companies in existence today that mined coal at that time in St. Louis are the Gartside Coal Co. and the Parker-Russell Mining & Manufacturing Co.

Spens Orders Daily Reports on Kind, Amount and Price Of Soft Coal Shipped and to Whom Sent

Federal Fuel Distributor Spens' first official act is Order No. 1, issued on Sept. 27. This order divides the soft-coal fields into 17 districts and directs every producer and shipper to make detailed, signed daily reports showing with respect to each car of coal the kind or grade, tonnage, consignee and price, and whether shipped on a contract. Until offices in the field have been designated to which these reports can be mailed they are to be sent to Washington.

In making the order it is pointed out that the Fuel Control Act requires the Federal Fuel Distributor to ascertain many things with regard to production, distribution, prices, shortages and character of consumption. Accordingly, Mr. Spens for administrative purposes has divided the coal fields into 17 units and calls for daily reports from all shippers.

Paragraph 2 of the order thus sets forth the requirements as to reporting:

"Each and every producer of bituminous coal engaged in the mining and production thereof at any place in any of the above designated producing districts shall daily, until further order, mail to the District Representative of the Federal Fuel Distributor in the district in which such coal shall be produced, a written statement or report, signed by such producer, or producers, or by his, their, or its duly authorized representative, setting forth fully and specifically the following information as to all shipments of bituminous coal made during the previous day:

(a) The total number of carloads of each class or grade and size.

(b) Names and addresses of consignees, with car numbers and initials, destinations and amount of each class or grade and size of coal shipped to each consignee.

(c) As to each shipment, the prices or prices f.o.b. mine as contracted for, charged and (or) received for each grade of coal shipped. In the case of coal sold at a delivered price at destination the destination price less transportation cost shall be used as the mine basis.

(d) A designation of such of said shipments as shall have been made under time (or period) contracts for periods of more than one month's duration."

The 17 "producing districts," each to be under the management and direction of a district representative, yet to be appointed, are described as follows:

Producing Districts Designated by Mr. Spens

(1) Alabama; headquarters, Birmingham.

(2) Tennessee; headquarters, Knoxville.

(3) Virginia; headquarters, Norton.

(4) All of Kentucky east of the 85th meridian; headquarters, Cincinnati.

(5) All of Kentucky west of the 85th meridian; headquarters, Louisville.

(6) New River, Winding Gulf, Pocahontas and Tug River districts in West Virginia; headquarters, Bluefield.

(7) Kanawha, Logan and Kenova-Thacker districts in West Virginia; headquarters, Charleston.

(8) Fairmont, Coal and Coke, and Upper Potomac districts in West Virginia, with all other districts in said state not otherwise included, and Maryland; headquarters, Fairmont.

(9) Central Pennsylvania, including the Somerset district; headquarters, Altoona.

(10) Westmoreland, Fayette, Washington and Greene counties in Pennsylvania, the Ligonier Valley district and all mines in Pennsylvania on the west bank of the Monongahela River on the Pennsylvania R.R.; headquarters, Greensburg.

(11) Pittsburgh district, and all other districts in the State of Pennsylvania not otherwise included; headquarters, Pittsburgh.

(12) Ohio; headquarters, Columbus.

(13) Indiana; headquarters, Evansville.

(14) Rock Island, Northern, Wilmington, Fulton-Peoria, Danville and Central districts in Illinois; headquarters, Springfield.

(15) Franklin, Williamson and Saline counties, the Belleville and Mt. Olive districts and all other districts in Illinois not otherwise included; headquarters, St. Louis, Mo.

(16) Iowa, Montana and North Dakota, reporting to C. P. White, Assistant Federal Fuel Distributor, State Capitol Building, St. Paul, Minn.

(17) The United States west of the Mississippi River, except the States of Iowa, Montana and North Dakota, reporting directly to the Federal Fuel Distributor at Washington, D.C.

Assurances of cordial co-operation in the execution of measures deemed necessary to insure an equitable distribution of coal in the present emergency are being received by Mr. Spens from the governors and fuel administrators of the various states. Governor E. F. Morgan, of West Virginia; Hugh J. M. Jones, State Fuel Distributor of Vermont; William J. Grier, chairman of the New Jersey Fuel Commission; Major Alex. Forward, Fuel Administrator of Virginia; J. W. McCardle, chairman of the emergency fuel commission of Indiana; Ivan Bowen, Fuel Director of Minnesota; Governor Len Small of Illinois, the Pennsylvania Fuel Commission, and W. H. Woodin, head of the New York State Fuel Commission, are among those heard from.

North Carolina Public Utilities Face Shutdown

R. O. Self, director of the North Carolina State Coal Distribution Committee, reports that a number of public-utility gas companies are facing a shutdown unless gas coal supplies can be furnished at an early date. The difficulties of these companies are due to the inadequacy of the car supply in the Southern Appalachian coal-producing districts.

Foreign-owned vessels are urged to take on all coal supplies possible at foreign ports. Fuel Distributor Spens has declared that, in his opinion, the existing reconsigning rules should be permitted to stand without revision for the present. "It is true that at about the time the coal strike was ended there was at certain terminals quite a quantity of coal on hand awaiting disposition, but this was due largely, I think, to the fact that this coal had been purchased at high prices, with the result that the breaking of the strike made it difficult for the operators or jobbers to find customers," said Mr. Spens in a letter to the Interstate Commerce Commission. "Today there appears to be approximately one-third of 1 per cent of the total loading of cars held for reconsignment, and I am inclined to the opinion that, with the big demand for coal that now exists and with the instructions that you have extant that consignees must unload within twenty-four hours or be embargoed, we need not, just at this time, have much apprehension that the privilege will be dangerously abused."

An urgent appeal to concentrate on a drive to expedite coal movements, especially during the month of October, has been addressed by Fuel Distributor Spens to the executives of the various coal-carrying railroads.

"I appreciate fully the current conditions on the railroads; the ravages of the strike, and the fact that today the offerings of tonnage of all character are large, and the further fact that, in spite of these circumstances the carriers, in the aggregate, are making a splendid showing in the transportation of coal," says Mr. Spens. "In these circumstances I am loath to suggest the possibility of even better performance.

"Due to the dual strikes there is, of course, a dearth of coal. Consumers, domestic as well as industrial, have been urged only to purchase coal for immediate requirements. Current transportation is adequate for current needs, but not sufficient to permit of reserves. An early cold snap

would play havoc with consumers, as well as with the power of the railroads. There might be actual distress.

"It has been suggested that perhaps there should be a temporary cessation in transportation of certain other classes of traffic, that more equipment and power might be applied to coal. In my judgment it would be regrettable if any action in that direction should become necessary.

"As suggested by the President, we are extremely anxious to make October the banner month. A personal word directly from you to each member of your operating staff, down, if you will, at least to the division superintendent, that coal shall, so far as practicable, be moved through to destination or junctions with connecting lines, without set-outs, and that empties shall not be delayed at terminals or junctions but shall be promptly returned to mines will, I am confident, accomplish all that could be reasonably expected. Your traffic department could undoubtedly also be of great assistance by urging prompt unloading by consignees.

"Extraordinary movement of coal, loads and empties during the next few weeks, in view of the heavy traffic in all commodities, probably will tend to increase the cost of handling, but I believe this additional cost might prove to be a good investment as compared with a much greater cost that might be incurred in the event it should become necessary to adopt more drastic measures to care for the situation.

"Very possibly to accomplish increased handlings of coal, delays to other traffic may occur, but this is contemplated, or at least should be expected, under the existing order of the Interstate Commerce Commission which provides priority in transportation of coal equal only with food and feed and some minor public necessities."

Business Men Will Help Expedite Coal Traffic

A committee of railroad executives, headed by Daniel Willard, president of the Baltimore & Ohio, and an industrial advisory committee of prominent business men, including Wm. J. Dean, president of Nicols, Dean & Gregg, St. Paul, Minn.; A. A. Landon, president of the American Radiator Co., Buffalo, N.Y.; R. P. Lamont, American Steel Foundries, Chicago, Ill.; A. J. Brosseau, president, International Motors Co., New York City, and S. M. Vauclain, president of the Baldwin Locomotive Works, Philadelphia, Pa., have been appointed to assist in expediting coal traffic and to have large industrial consumers confine purchases of coal under present conditions as closely to current needs as safety permits; to suspend accumulation of advance stocks of coal until the present emergency pressure on production is relieved; to unload coal cars immediately and return them to service and to furnish promptly material required for new railroad equipment or repairs.

A committee of the National Coal Association, of which John C. Brydon, of Baltimore, is chairman, has been conferring with federal officials in Washington with a view to arranging a plan of co-operation between the bituminous-coal producers of the country and the fuel administration.

Assignments of naval officers who will act as field representatives of the Federal Fuel Distributor are as follows: Lieutenant Commander H. H. Ritter, St. Louis, Mo.; Lieutenant Commander A. W. Rieger, Cincinnati, Ohio; Lieutenant Commander L. A. Davidson, Knoxville, Tenn.; Lieutenant Commander Louis Hancock, Jr., Pittsburgh, Pa.; Lieutenant Commander H. H. Bouson, Columbus, Ohio; Lieutenant Commander J. R. Mann, Jr., Louisville, Ky.; Lieutenant H. O. Patrick, Evansville, Ind.; Lieutenant E. P. Eldridge, Birmingham, Ala.; Lieutenant G. C. Hitchcock, Springfield, Ill.; Lieutenant E. P. A. Simpson, Charleston, W. Va.; Lieutenant G. B. Junkin, Fairmont, W. Va.; Lieutenant Edward O'Keefe, Norton, Va.; Lieutenant F. B. Conger, Altoona, Pa.; Lieutenant W. J. Larson, Bluefield, W. Va.; Lieutenant Joseph C. Arnold, Greensburg, Pa.

These officers are now in the field and have been instructed to keep the Fuel Distributor informed daily on local conditions as to production, distribution and price.

Wayne P. Ellis, assistant chief of the coal division of the Department of Commerce, has been detailed to the office of the Fuel Distributor as statistician.

Ohio Begins Regulation of Coal

Production, transportation and distribution of coal in Ohio, from the time it is loaded at the mines until it is dumped into consumers' bins, must be reported to the Ohio Fuel Administrator, including prices received by producers, wholesalers, jobbers and retailers, according to a statement issued at Columbus. A comprehensive system of reports from all dealers, jobbers and shippers of all the coal shipped, received or sold in any quantity and form must be made direct to the fuel administrator.

"In the event that any violations or apparent violations are found, civic organizations are at once to make a report to the administrator so that an immediate investigation of the case may be made and the violators subjected to the penalties provided for in the emergency act," reads the announcement. "Producers will be required to report the quality of coal mined, loaded and shipped, with the prices obtained for it. Wholesalers and jobbers must report shipments received, from what source they came, to whom they were consigned and the price received for them. The retailer must report shipments received, from whom they came and the prices received. This class of dealers will not be required to make a report of each separate transaction, but will lump their sales. All these reports are to be made daily, and are mandatory under the act. Thus Administrator Neal and his staff will have a hand on the pulse of the situation at all times."

Output of Smokeless Coal Fell Sharply in July, When Rail Strike Began

West Virginia produced and shipped 2,630,565 net tons of smokeless coal during July, 1922. This is approximately 500,000 tons higher than for July last year, but is the lowest of any month since the strike began and a sharp decline from the June output of 3,777,558 tons.

The total for the first seven months of 1922 is 22,018,974 tons, as compared with 16,170,355 tons during the corresponding period last year.

JULY OUTPUT OF SMOKELESS COALS OF WEST VIRGINIA

	Net Tons			
District	1922	1921	1922 Decrease	1922 Increase
Pocahontas	1,277,460	1,052,170	.....	225,290
Winding Gulf	549,348	464,055	.....	85,293
New River	494,737	297,770	.....	196,967
Tug River	309,020	350,190	41,170	.....
Total, July	2,630,565	2,164,185	41,170	507,550
Total, June	3,777,558	2,869,974	.....	.....
Total, May	3,687,874	2,975,711	.....	.....

The Norfolk & Western hauled 1,586,095 tons of the July output, the Virginian 459,590 tons and the C. & O. 584,880 tons. Total coal movement in net tons of these roads during that month is shown in the following table:

HAULED BY NORFOLK & WESTERN

Pocahontas	1,277,075	Clinch Valley	175,890
Tug River	309,020	Kenova	137,665
Thacker	445,085		
Total			2,344,735

HAULED BY CHESAPEAKE & OHIO

Logan	785,430	Kanawha	122,300
New River	426,220	Coal River	89,770
Winding Gulf	158,660	Kentucky	236,480
Total			1,818,860

HAULED BY VIRGINIAN RY.

Winding Gulf	390,688	New River	68,517
Pocahontas	385	High Volatile	50,738
Total			510,328

The output from open-shop mines in the Connellsville coke region continues to increase steadily. Many men are coming into the region from other sections and a number of old men are returning to work. Two additional plants of the H. C. Frick Coke Co., the Shamrock Coke Co., Griffin No. 2 plant of the Hillman Coal & Coke Co. and the Snowdon Coke Co. have resumed operations on an open-shop basis during the past week. This means that all the Frick plants and all the Hillman plants are mining.

Peace Between Operators and Mine Workers in Sight; District Committees to Work Out Wage Contracts

By E. W. Davidson

Cleveland, Ohio, Oct. 3—Peace appears to have made its entry at last into the long conflict between miners and bituminous operators. Tuesday night, after two days of the mine-operator conference looking toward the next wage agreement, fighting points between men and employers seemed to have been partly removed, a plan for adjustment of future controversies was under way and operators from fifteen mining districts, representing about two hundred and seventy-five million tons production, had almost ceased showing their teeth at each other. It was expected by both sides that the conference could end Wednesday afternoon.

It was practically decided Tuesday after considerable sparring for position both between the two sides and among operators themselves that the method of making future contracts between operators and miners would be worked out by a committee made up of miners and operators from each district, that no joint fact-finding commission should be appointed by that conference and that the request of Washington for a suggested panel of names from which the federal fact-finding commission might be appointed would be answered in the negative.

All this developed during Tuesday following a notable peace speech by John L. Lewis, president of the miners' union. This speech, along with a parallel one by T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, appeared to pave the way for real accomplishment by the operators, who up to that time had shown not the slightest sign of unity on any subject.

Lewis Bids Both Sides "Bury the Hatchet"

It was apparent when the conference started Monday that no harmony prevailed anywhere among the operators. Part of Ohio and a scattered few operators from Pennsylvania were regarded as ready to "play the miners' game" as they did at the August Cleveland conference which ended the strike. Many operators present were diffident about taking part in the conference, notably Illinois and the Pittsburgh and Central District men of Pennsylvania, who did not agree in the pacts they signed in August to join this conference. Many of the operators from elsewhere also were of doubtful status. It seemed necessary for them to unite on some common ground, but they couldn't do it until after Lewis' speech in which he bade both sides "bury the hatchet; bear in mind that it is essential for them to put their own house in order" and that the miners were ready to meet their employers half way.

"That sounds mighty good; if the miners only will live up to that, things will smooth out," declared more than one operator. Then they proceeded to compose some of their differences. It was made distinctly understood at the outset of this process that neither Illinois nor the two Pennsylvania regions would proceed unless it was distinctly understood that no decisions were to be dictated by any minority and that in the matter of creating a joint wage committee nobody was to be bound by the recommendations it might make Jan. 3.

When this understanding was finally reached the operators had taken their highest hurdle. They then proceeded to do business among themselves. The two main objects of this conference were to create a joint fact-finding committee and to set up another joint committee to recommend ways and means for future agreements.

The request from Washington for a panel of twenty names for the new federal coal commission was a new element. At first it appeared important, especially when the operators decided Monday to answer it with a message signed only by themselves, but later it lost weight when it became noised around that Lewis might not insist upon helping to make up such a panel, though he would insist that the reply to Washington be signed by both sides.

The joint fact-finding committee also appeared a less and less important issue as the conference wore on, for the operators got the impression that Lewis was willing to cancel that part of the program on the ground that the Federal Coal Commission would do just as well or better. By Tuesday night the operators agreed among themselves that the federal commission should be left the entire field of coal investigation, so that it could not be said that the coal industry was hampering the people in their effort to correct coal evils.

This left the creation of the wage committee as the principal business to be done at the conference. Some were for organizing it by regions but it was finally concluded that it should be by miners' presidential districts. It was distinctly understood, however, that this committee if created should make no recommendations until after the new federal fact-finding commission has brought in some results. On Tuesday night Phil. Penna, chairman for the operators' separate sessions, and W. D. McKinney, secretary of the Southern Ohio Coal Exchange, declared that the operators had reached a common ground and that if the miners were as reasonable as they sounded the conference would succeed easily.

Expect to Heal Many Schisms in the Industry

John Lewis said the war was over. Thus it appeared on Tuesday night that the operators and miners of the fifteen principal districts of the land had only a day of calm deliberation before them to finish the conference and that possibly many a schism in the coal industry might eventually be healed.

It was undecided whether the joint wage committee should contain one man or two from each side for each district, and it was not definitely decided what the conference reply to Washington would be, but most of the conflict is over.

Practically every producing district in the country was represented when the conference assembled Monday afternoon. T. K. Maher was named temporary chairman and William Green, of the Miners' International Union, temporary secretary. Adjournment was taken almost at once until 10 o'clock Tuesday upon motion of Phil Penna, secretary of the Indiana Coal Operators' Association. He said the operators needed time to "get acquainted" and to review the situation. They remained in session all afternoon, devoting much time to President Harding's wire asking for a panel of names of men suggested for the federal fact-finding board. It seemed obvious that the operators will not favor sending such a list, since many names have already been proposed by coal men. The discussion the rest of the afternoon indicated that the leaders among the operators' faction which led the settlement in Cleveland in August were going to stand pat.

Tuesday morning the committee which the operators had appointed to draft a diplomatic reply to Secretaries Hoover and Davis declining to suggest names for the President's fact-finding commission did their job of drafting, but they did not send it. The message was held because "developments of Tuesday made it seem politic" to wait, even though Washington expected a reply by Tuesday at the latest. The "developments" of the day included a loud demand by the miners that the message be signed jointly instead of going merely as a note from the operators. The miners held that the request which was received by T. K. Maher was addressed to him not as an operator but as temporary chairman of the joint conference.

As first drafted the message set forth that the operators, "having full confidence in the wisdom and fairness of the President of the United States" and expressing willingness to abide by whatever choices he should make, were ready to pledge "hearty co-operation" with such a federal commission. Herman C. Perry, of the 5th and 9th Districts of

Illinois, was chairman of the Drafting Committee. G. Webb Shillingford, of the Central Pennsylvania Association, and John A. Donaldson, vice-president of the Pittsburgh Coal Co., were members.

The Tuesday morning joint conference got down to business at ten o'clock by declaring itself in executive session. Thereupon the doors were closed and "keynote" speeches were made by Thomas H. Watkins, president of the Pennsylvania Coal & Coke Corporation, and John L. Lewis, president of the miners' union. Before this session closed it appeared more evident than ever that a united policy by the operators was essential. An effort of Monday afternoon to conceive such a policy on even the single question of procedure looking toward the next wage settlement failed.

An attempt to get a committee named to go into session late in the afternoon and report to the operators late that night was quashed and the operators had ended their Monday separate session without taking any definite step in that direction. But a considerable quantity of verbal fireworks was discharged during the meeting. Then came the Tuesday morning joint meeting, which resolved itself into a separate miners' session that lasted until afternoon, when the operators had their own meeting.

Operators from United Mine Workers districts Nos. 2, of central Pennsylvania; 5, of western Pennsylvania; 6, of Ohio; 8 and 11, of Indiana; 12, of Illinois; 13, of Iowa; 14, of Kansas; 17, of West Virginia; 21, of Oklahoma, Arkansas and Texas; 22, of Wyoming; 23, of western Kentucky; 24, of Michigan; 25, of Missouri, and 27, of Montana, were represented at the meeting.

Jobbers' Executive Board Meets at Buffalo; Many New Members Elected

G. H. Merryweather, secretary-treasurer of the American Wholesale Coal Association, authorizes the following:

"The Executive Committee of the American Wholesale Coal Association held a very successful and constructive meeting at Buffalo on Sept. 28 and 29, 1922. At this meeting many new members were elected and the activities of the association were discussed at length.

"The members of the committee were entertained at luncheon by the Buffalo District Wholesale Coal Association. It was presided over by John T. Roberts, of Buffalo. Addresses were made by Seth W. Morton, president; J. W. Johns, vice president; G. H. Merryweather, secretary-treasurer; Roy S. Bain, of Cleveland, Ohio; Charles L. Dering, of Chicago; H. J. Heywood, of Toledo, and Ira C. Cochran, who was at this meeting appointed acting commissioner, as well as traffic manager, which latter position he has occupied for some time.

"The association is making excellent progress in solving the problems which confront the industry from day to day."

Western Fuel Corporation and Coal Miners Sign Two-Year Agreement

A 2-year agreement has been entered into between the management and the employees of the Western Fuel Corporation of Canada, Nanaimo, B. C., effective Oct. 1, 1922.

A minimum daily wage of $4.25½ is set. The superintendent of mines is to be the judge as to the ability of each man to earn the minimum. The company agrees to pay all employees a bonus of $1 per day worked. "It is mutually understood by the company and its employees that any increase or decrease in the bonus herein mentioned shall be governed by competitive conditions," the agreement states. Heretofore the bonus has been 88c. per day worked. The price of coal to employees is set at $3 per ton.

THE REGULAR QUARTERLY MEETING of the Board of Directors of the National Coal Association will be held in Cleveland Oct. 11.

Fundamental Business Conditions Sound

No clearer demonstration could be asked to indicate the soundness of the fundamental conditions underlying the present business revival, the Department of Commerce reports, than the persistence with which commerce and industry have progressed in the face of recent serious obstacles. The extremely serious labor difficulties through which we are now passing would, under many conditions, have completely demoralized business; instead, real progress continues to be made. There is reason to suppose that the economic losses occasioned by the coal and railroad strike will make themselves felt for some months to come. Disturbances of this character affecting basic industries cannot take place without having to be paid for in the long run. It is possible that the full force of these losses will be felt more severely in future months.

Figures now available on business movements during July show that the rate of progress was materially slackened in that month. In the majority of industries production and sales were less than in June. A part of this is to be attributed to the usual midsummer seasonal slump and a part either to approaching overproduction or to increased prices and increased production costs.

The extent of the real progress of industry on the road back to normal is seen when current figures are compared with those for a year ago. In almost every instance production is on a much higher level than in 1921. Perhaps the most favorable feature of the present situation is the prospect for a bountiful harvest this fall. This will do much to offset the other less favorable factors.

Under the appended schedules mining and yardage pay is given as follows:

MINING

Wakesiah and Reserve Mines and No. 1 Upper Seam—91½c. per ton.
Upper Seam—Coal under 4 ft. in thickness, $1.08 per ton.
Lower Seam—$1.08 per ton.

YARDAGE—UPPER SEAM

Levels—$3.37 per yard and coal.
Crosscuts—$2.70 per yard and coal.
Levels—When less than one-half of height is in white rock, $10.12½ per yard; coal to company.
Levels—When more than one-half of height is in white rock, $10.80 per yard; coal to company.
Turning Stalls—Five yd. long by 4 yd. wide, $13.50 and coal.
Brushing rock—One ft. thick, $1.35 per linear yard.

The day rates range from $3.71½ for muckers to $4.99½ for machine foremen, plus the bonus.

Trading Loss of £550,000 Shown in British Coal Mining Industry in June

Collation of the proceeds and costs of the working of the coal-mining industry of the United Kingdom for June, for the purpose of determination of wages in August, shows a gross trading loss of about £550,000 in that month for the whole of the coal-mining industry throughout the country, equivalent to about 9d. per ton of coal. The average earnings per shift worked in June, taking into account all persons in the industry—men, women and boys—were 9s. 8¼ d., or about 50 per cent more than the 1915 figure of 6s. 5½d.

Fuel Distributor Spens' order requiring daily reports from coal producers, printed on page 557 of this issue of COAL AGE, *is now being served on operating companies by mail.*

THE GEOLOGICAL SURVEY AND THE DEPARTMENT OF COMMERCE are sending out questionnaires requesting information on stocks of coal as of Sept. 1 and Oct. 1. The report of the canvass, which will be the first since March 1 of this year, is expected to be available by Nov. 1, 1922.

Coal Strikes Unknown in Near East, but It Has Fuel Problem

Cold weather does not spell "coal" to the American relief workers in the Causasus district of Armenia; it spells "camels," for the fuel question is just as vital in the Near East as it is here, but the answer is different. In the chilly Caucasus area, where the mercury often creeps down to 16 deg. below zero and there are more than 30,000 shivering youngsters to be kept warm in the orphanages of the Near East Relief, wood is the fuel on which relief workers must depend, according to the Near East Relief.

The accompanying illustration shows a caravan of camels carrying wood fifty miles overland to keep these people

© Photo by Near-East Relief

ONE SOLUTION TO TRANSPORTATION PROBLEMS
Camels fighting the fuel shortage in the Near East

warm this winter. That is how the answer to cold in Armenia comes to be camels. Camels, or ox teams, for the latter do just as well, carry the fuel over many miles. A caravan of seven hundred ox teams was organized last year by an enterprising worker, and rendered remarkably good service.

The Ending of the Coal Miners' Strike

It is some time since the August conference at Cleveland wound up its proceedings with a great victory—for whom? At this time of writing it would appear that honors are fairly well divided; the miners can still claim their seven and a half a day and the operators are getting a good price for their coal to enable them to pay it.

When word was sent out to start work at once did the miner rush down to the mine with the same smile on his face he had when he brought his tools out on the last day of March? If anyone who was not around the mines at that time thinks he did, he is very much mistaken. He took the news very calmly. Many of them still sit with their feet on the front porch rail, pulling at their old pipe, praising Mr. Lewis for the glorious victory.

After our mines had been running a week I noticed that the coal did not rush up the slope (as we fondly anticipated), and found on inquiry that the men were not going to work, and those who were going were not loading much coal. At this information I ventured among the miners' houses and, seeing several of the men, I began timidly to ask them if they knew the strike was finished. Most of them somehow thought there was some change, but they would talk about anything but work. Another superintendent came to me in a great state of mind, saying they were not loading one-tenth of the coal they were before the strike.

The mine foreman spends most of his time showing them places with the result that 99 per cent try another mine the next day and every boss (they know) is standing with open arms to meet them. This strike has made men more dissatisfied and less inclined to work than ever they were before. They have gone five months without work and it seems a lot of them feel they can go on indefinitely without work, and if a superintendent or boss ventures to remind them that those big wages will not always prevail and tells them to make hay while the sun shines, they tell him he does not know what he is talking about.

I cannot help but wonder what is going to be the end of all this. It seems to me that we shall have to have a five months' strike every year to keep production down and prices up on purpose to pay the miner the big wages he is receiving. Mr. Lewis knew what he was doing when he refused the arbitration clause, but it seems to me he either will not or cannot see that it is a mistaken kindness to keep the miners' wages inflated above the rest of the workingmen.

Indiana, Pa., Sept. 5, 1922. T. HOGARTH,
Superintendent.

Independent Anthracite Prices Give Concern; 1920 Level Allowed Temporarily

Independent producers' prices on anthracite are still giving the official bodies of Pennsylvania and Washington some concern. Governor Sproul of Pennsylvania on Sept. 20, 1922, issued a proclamation establishing $8.50 as the maximum price on prepared sizes of anthracite, conferred executive authority on the Pennsylvania Fuel Commission, of which Wm. D. B. Ainey is chairman, and announced that a Fair Practice Committee would be appointed to deal with prices of coal.

Independent operators at once let it be known that they could not produce and sell at the $8.50 maximum, and on Sept. 22 they were informally advised by Mr. Ainey's office that pending the decision of the new Fair Practice Committee they would be allowed to charge prices that were considered fair by the Fair Practice Committee of 1920.

Edgar F. Felton has been appointed chairman of the Fair Practice Committee and has been engaged in the last few days in a study of costs of production of anthracite. A meeting was held on Oct. 2 but no conclusions were reached and no announcement was made other than that everyone concerned with the distribution of coal would be called in an effort to lower the price to the consumer.

It is understood that one large independent held to the $8.50 maximum for a short time, but has now advanced his price to $9.15. Little independent coal is quoted in Philadelphia over $9.50. Quotations in New York, however, are more general at $10.50@$12.50.

At an executive session held Sept. 22 at Harrisburg the Pennsylvania Fuel Commission spent considerable time discussing the appointment of a fair-practice committee, to be established as provided for in the proclamation of Governor Sproul, and the methods to be followed in determining promptly and fairly the cases coming before it.

The commission also met representatives of some of the independent anthracite coal companies and it is understood that the base price some of the companies originally asked for was considerably lowered during the discussion. No decision relative to prices of independent companies' coal was reached, except that it was agreed that the new committee would have to deal with each company individually.

A statement issued by the commission follows:

"The handling of the situation between the present and the time when this committee can function so as not to hold up production was likewise discussed. The commission arranged to have representatives visit immediately some of the larger cities to make plans for local distribution.

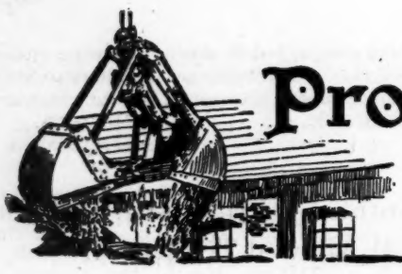
"No meeting of coal operators was called, but representatives of three companies who desired to discuss informally the situation of their particular companies and the methods to be pursued under the Governor's proclamation were heard.

"The personnel of the Fair-Practice Committee is being canvassed and will soon be announced.

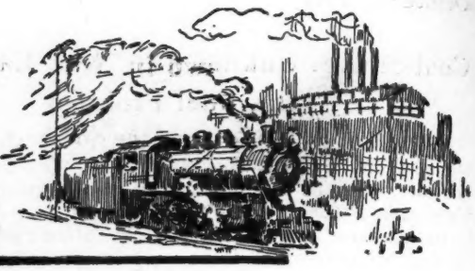
"Several of the companies which have announced selling prices higher than the $8.50 basis are prepared to withdraw these and make some reductions in their basic rates until the Fair Practice Committee can hear their cases.

"Chairman Ainey stated that there was no modification of the commission's purpose to keep anthracite-coal prices to the lowest point consistent with securing a 100 per cent output. In this respect the commission stands unwaveringly on its former utterances and the policy of the Governor that there shall be no strike losses or losses from mine idleness carried into the present coal prices."

THE NEW VERB "to coal" has some interesting forms, among which we notice "shall we coal?" "we will coal!" etc. It all ends, however, with "we may be cold."—*New York Sun.*



Production and the Market



Weekly Review

Prices hinge on the urgency of demand. Steam coals are weaker but domestic fuels are advancing with the advent of cold weather and the usual seasonal household demand. This market is not yet in full swing, but today's domestic quotations have all the earmarks of further increases, as the short supply will be accentuated by orders placed as a substitute for hard coal. This demand will fall largely on producing districts not usually called upon to furnish coal for domestic use, but will doubtless also lead to emergency shipments eastward of high-grade domestic from fields west of the Alleghenies.

Coal Age Index of spot bituminous coal prices declined to 404 on Oct. 2, as compared with 418 the week before. This represents an average spot price of $4.89 at the mines. The decreases were spread over nearly every district, only the Hocking field showing an increase, Clearfield (Pa.) and Springfield (Ill.) coals holding firm.

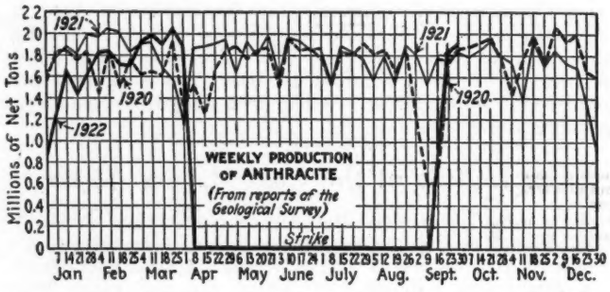
Steam Consumers Conspicuously "Backward"

The steam consumer is purposefully staying out of the market and is taking little coal aside from current needs. In the Middle West he is able to obtain this tonnage by picking up bargain lots which are still sent in on consignment, often being sold under pressure of heavy demurrage. Screenings have been selling on a par with mine-run, but with the apathetic steam market and the better domestic call more operators are screening their output, and this is fast softening the resultant sizes.

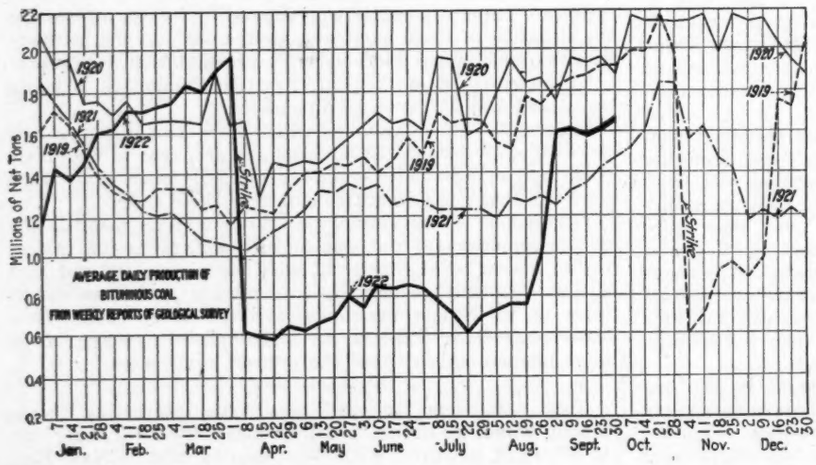
Recent press notices, "à la Ford," have advised buyers "to delay purchases as prices must drop further." The coal trade generally fails to see how deferred demand can spell anything but higher prices, especially with transportation conditions as they are and will be this winter. An argument advanced by buyers in the Lake coal-producing zone is that it is unwise to enter stocking orders at a time when they must compete for tonnage with dock buyers.

With 25 per cent of their motive power out of commission the railroads of the country are now attempting to handle the peak of the year's business. There are no signs that the crest has been reached. Traffic men generally believe that business will be offered the railroads in increasing amounts more rapidly than its locomotives can be restored to the service.

The effect of the Lake sailors' strike which began Sunday at midnight was still doubtful Monday night. Coal-laden vessels continued to load and clear for upper



ports. The Lake Carriers' Association asserted that no boats are tied up and that few men have struck. On the other hand E. J. Sullivan, secretary of the Cleveland local of the union, said most union men had quit and that boats that cleared from there went out with "criminally short crews." The Lake Carriers' Association states it is going to handle all the coal that can be dumped at the docks and that it will be moved for the especial benefit of the Northwest. Railroads originating coal for the Lakes have issued temporary embargoes, until congestion is cleared or the effect of the strike determined.



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1921	1922
Sept. 9 (*b*)	7,083,000	8,791,000
Sept. 16 (*b*)	8,187,000	9,737,000
Sept. 23 (*a*)	8,527,000	9,702,000
Daily average	1,421,000	1,617,000
Calendar year	286,550,000	261,149,000
Daily av. cal. yr.	1,280,000	1,162,000

ANTHRACITE

Sept. 9	1,483,000	50,000
Sept. 16 (*b*)	1,749,000	1,107,000
Sept. 23 (*a*)	1,725,000	1,856,000
Calendar year	67,759,000	25,224,000

COKE

Sept. 16 (*b*)	64,000	123,000
Sept. 23 (*a*)	70,000	135,000
Calendar year	4,034,000	4,625,000

(*a*) Subject to revision. (*b*) Revised from last report.

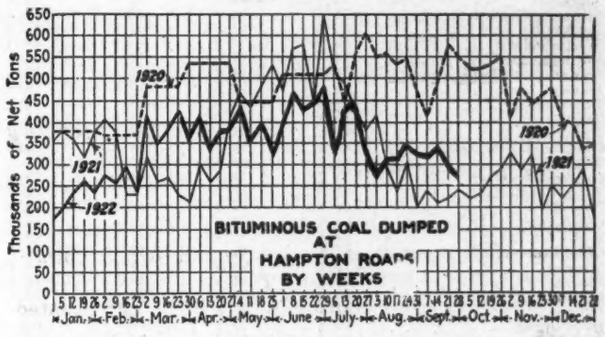
Normal production of anthracite is being retarded by the same conditions that hamper the soft-coal industry —lack of cars and poor transportation. There also is a dearth of labor. The effect of the car shortage is only just now being felt. During the last four days of September the supply began to be "spotty," incurring delays at collieries located on the Lehigh Valley, Erie and D. L. & W. lines.

The anthracite price situation is confusing. Retailers have received independent quotations ranging $9.15@$13 and even higher and are loath to pass this on to their trade. The $8.50 price recommended by the Pennsylvania governor has not been effective and the commission now urges that, pending further investigation and adjustment, operators refrain from charging prices exceeding those established in 1920 by the Fair Practice Committee, which prices ranged up to $12.50, averaging around $10.50.

BITUMINOUS

"Production of both bituminous coal and anthracite appears to have found a temporary level, bituminous at around 9,750,000 net tons, and anthracite at 1,850,000 tons a week," says the Geological Survey. The total of all coal raised is therefore about 11,600,000 net tons, still somewhat less than the amount required to meet current consumption and the heavy movement up the Lakes, and at the same time to rebuild consumers' stocks.

"The output of bituminous coal for last week is estimated at from 9,600,000 to 9,900,000 tons. Heavy loadings



in the early part of the week—38,804 cars on Monday and 33,396 on Tuesday—were largely offset by a decline later in the week. By Thursday loadings had dropped to 26,862 cars as against 29,036 on the preceding Thursday."

The all-rail movement of soft coal to New England increased to 3,255 cars during the week ended Sept. 23

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 5, 1922	Sept. 18, 1922	Sept. 25, 1922	Oct. 2, 1922†
Smokeless lump	Columbus	$6.10	$6.25	$6.65	**$6.00@$7.50**
Smokeless mine run	Columbus	5.50	5.75	6.00	*5.00@ 6.50*
Smokeless screenings	Columbus	5.35	5.50	5.75	5.00@ 6.50
Smokeless lump	Chicago	6.40	6.25	6.50	*5.00@ 7.50*
Smokeless mine run	Chicago	6.25	5.85	5.85	4.75@ 7.00
Smokeless lump	Cincinnati	5.60	6.50	6.30	5.15@ 7.50
Smokeless mine run	Cincinnati	4.75	5.50	5.70	4.90@ 6.50
Smokeless screenings	Cincinnati	4.40	5.50	5.30	4.60@ 6.00
*Smokeless mine run	Boston	9.00	8.05	8.05	7.85@ 8.25
Clearfield mine run	Boston	5.00	4.35	4.50	4.25@ 4.75
Cambria mine run	Boston	6.00	5.25	5.00	*4.50@ 5.00*
Somerset mine run	Boston	5.25	4.85	4.75	*4.25@ 5.00*
Pool 1 (Navy Standard)	New York	....	5.40	5.75	*5.25@ 5.75*
Pool 1 (Navy Standard)	Baltimore	....	5.50	5.90	*5.50@ 6.00*
Pool 9 (Super. Low Vol.)	New York	5.75	4.75	5.00	*4.75@ 5.00*
Pool 9 (Super. Low Vol.)	Philadelphia	5.85	5.60	5.35	*4.25@ 5.00*
Pool 9 (Super. Low Vol.)	Baltimore	6.25	5.10	5.50	*5.00@ 5.25*
Pool 10 (H.Gr.Low Vol)	New York	5.35	4.35	4.65	4.50@ 4.75
Pool 10 (H.Gr.Low Vol.)	Philadelphia	5.60	5.10	5.10	*4.00@ 4.50*
Pool 10 (H.Gr.Low Vol.)	Baltimore	5.85	4.85	4.85	*4.50@ 5.00*
Pool 11 (Low Vol.)	New York	5.10	4.10	4.10	*3.75@ 4.00*
Pool 11 (Low Vol.)	Philadelphia	5.10	4.85	4.60	*3.75@ 4.25*
Pool 11 (Low Vol.)	Baltimore	5.35	4.35	4.35	*4.00@ 4.50*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	5.15	4.35	4.70	**3.85@ 4.50**
Pool 54-64 (Gas and St.)	Philadelphia	4.75	4.60	4.60	*4.00@ 4.50*
Pool 54-64 (Gas and St.)	Baltimore	5.25	4.60	4.75	*4.00@ 4.35*
Pittsburgh sc'd. (Gas)	Pittsburgh	....	....	....	5.25@ 5.50
Pittsburgh mine run (St.)	Pittsburgh	....	4.65	4.50	*4.00@ 4.50*
Pittsburgh slack (Gas)	Pittsburgh	....	....	....	3.75@ 4.25
Kanawha lump	Columbus	5.85	5.75	6.40	**6.50@ 7.00**
Kanawha mine run	Columbus	5.60	5.50	5.75	**5.75@ 6.00**
Kanawha screenings	Columbus	5.35	5.30	5.65	**5.75@ 6.00**
W. Va. Splint lump	Cincinnati	5.35	6.85	6.50	*6.00@ 6.50*
W. Va. Gas lump	Cincinnati	5.35	6.85	6.50	*6.00@ 6.50*
W. Va. mine run	Cincinnati	5.35	5.35	5.35	*4.75@ 5.75*
W. Va. screenings	Cincinnati	4.85	5.25	5.10	*4.50@ 5.00*
Hocking lump	Columbus	6.25	5.75	6.25	6.00@ 6.50
Hocking mine run	Columbus	5.25	5.10	4.75	**4.50@ 5.25**
Hocking screenings	Columbus	5.25	5.25	*4.25	**4.25@ 4.75**
Pitts. No. 8 lump	Cleveland	5.50	4.85	5.00	*4.50@ 5.25*
Pitts. No. 8 mine run	Cleveland	$5.25	$4.60	$4.60	*$4.25@$4.55*
Pitts. No. 8 screenings	Cleveland	5.25	4.60	4.35	*4.00@ 4.25*
Midwest					
Franklin, Ill. lump	Chicago	5.05	5.40	5.40	5.25@ 5.50
Franklin, Ill. mine run	Chicago	4.65	4.75	4.75	4.50@ 5.00
Franklin, Ill. screenings	Chicago	4.25	4.45	4.10	*3.50@ 4.25*
Central, Ill. lump	Chicago	4.95	5.10	5.10	4.90@ 5.25
Central, Ill. mine run	Chicago	4.50	4.55	4.55	4.35@ 4.75
Central, Ill. screenings	Chicago	4.30	3.60	3.35	3.25@ 3.50
Ind. 4th Vein lump	Chicago	5.25	5.25	5.25	5.00@ 5.50
Ind. 4th Vein mine run	Chicago	4.85	4.85	4.85	4.65@ 5.00
Ind. 4th Vein screenings	Chicago	4.75	4.60	3.85	3.75@ 4.00
Ind. 5th Vein lump	Chicago	5.10	5.10	5.10	4.90@ 5.25
Ind. 5th Vein mine run	Chicago	4.65	4.65	4.65	4.50@ 4.75
Ind. 5th Vein screenings	Chicago	4.40	4.40	3.85	*3.50@ 3.75*
Standard lump	St. Louis	4.65	4.75	4.90	*4.00@ 5.50*
Standard mine run	St. Louis	3.90	3.90	3.90	*3.75*
Standard screenings	St. Louis	3.75	2.85	2.50	*2.25@ 2.50*
West Ky. lump	Louisville	4.25	4.75	4.90	**5.00@ 6.00**
West Ky. mine run	Louisville	4.25	4.25	4.25	*3.75@ 4.00*
West Ky. screenings	Louisville	4.25	4.00	4.00	*3.50@ 3.65*
West Ky. lump	Chicago	4.25	4.25	4.25	3.50@ 5.00
West Ky. mine run	Chicago	4.25	4.25	4.25	3.50@ 5.00
South and Southwest					
Big Seam lump	Birmingham	4.75	3.45	3.75	3.45@ 4.00
Big Seam mine run	Birmingham	4.00	2.60	2.80	*2.60@ 2.90*
Big Seam (washed)	Birmingham	4.00	3.10	3.45	*3.10@ 3.60*
S. E. Ky. lump	Chicago	4.25	4.25	6.00	**5.00@ 7.50**
S. E. Ky. mine run	Chicago	4.25	4.25	4.75	4.50@ 5.00
S. E. Ky. lump	Louisville	5.00	6.65	6.90	**6.00@ 8.00**
S. E. Ky. mine run	Louisville	5.00	5.65	5.65	*5.00@ 5.75*
S. E. Ky. screenings	Louisville	4.90	5.50	5.50	*5.00@ 5.25*
S. E. Ky. lump	Cincinnati	5.50	6.85	6.85	*6.00@ 7.00*
S. E. Ky. mine run	Cincinnati	5.25	5.35	5.50	*4.75@ 5.50*
S. E. Ky. screenings	Cincinnati	4.85	5.25	5.10	*4.50@ 5.50*
Kansas lump	Kansas City	6.00	6.25	6.25	.....
Kansas mine run	Kansas City	5.00	5.00	5.00	.....
Kansas screenings	Kansas City	2.60	2.60	2.60	.....

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

	Market Quoted	Freight Rates	Sept. 25, 1922 Latest Independent	Sept. 25, 1922 Pre-Strike Company	Sept. 25, 1922 Independent	Sept. 25, 1922 Company	Oct. 2, 1922† Independent	Oct. 2, 1922† Company
Broken	New York	$2.34	.....	$7.60@$7.75	$9.00	$7.75@$8.15	.....	$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.75	$9.25@$9.50	7.75@ 8.35	**$9.25@$12.50**	**7.75@ 8.50**
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.50	8.10@ 8.35	**9.25@ 9.75**	8.10@ 8.35
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@ 9.50	8.00@ 8.35	**9.25@12.50**	**8.00@ 8.50**
Stove	Philadelphia	2.39	7.85@ 8.15	8.05@ 8.25	9.25@ 9.50	8.15@ 8.35	**9.25@ 9.75**	8.15@ 8.35
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@ 9.50	8.00@ 8.35	**9.25@12.50**	**8.00@ 8.50**
Chestnut	Philadelphia	2.39	7.85@ 8.15	8.05@ 8.25	9.25@ 9.50	8.15@ 8.35	**9.25@ 9.75**	8.15@ 8.35
Range	New York	2.34	.....	.....	.....	8.15	.....	8.15
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.55@ 7.00	6.15@ 6.20	6.55 7.00	6.15@ 6.20
Pea	Philadelphia	2.14	5.50@ 6.00	6.15@ 6.25	6.75@ 7.00	6.15@ 6.20	**7.00@ 7.25**	6.15@ 6.20
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	4.00@ 6.50	4.00@ 4.25	*3.50@ 4.00*	4.00@ 4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	4.00@ 5.50	4.00	*4.00@ 4.25*	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	2.75@ 4.00	2.75@ 3.00	*2.75@ 3.00*	2.75@ 3.00
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	.....	2.75@ 3.00	2.75@ 3.00	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	2.00@ 3.00	2.00	*1.75@ 2.00*	2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	.....	2.00	2.00	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.75	.....	2.75

† Advances over previous week shown in **heavy type**, declines in *italics*.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5, to Sept. 16, 1922 Inclusive	Week Ended Sept. 16
U. S. Total	45.6	55.7	....	....
Alabama	63.5	64.6	87.4	86.8
Somerset County	55.5	74.9	40.0	38.5
Panhandle, W. Va.	55.3	51.3	67.5	66.3
Westmoreland	54.9	58.8	89.9	89.3
Virginia	54.8	59.9	52.5	56.4
Harlan	53.3	54.8	18.4	18.5
Hazard	51.7	58.4	12.6	10.7
Pocahontas	49.8	60.0	37.1	35.6
Tug River	48.1	63.7	35.0	41.5
Logan	47.6	61.1	27.1	30.0
Cumberland-Piedmont	46.6	50.6	34.8	34.6
Winding Gulf	45.7	64.3	34.7	31.2
Kenova-Thacker	38.2	54.3	44.1	39.6
N. E. Kentucky	32.9	47.7	24.7	22.3
New River	24.3	37.9	32.5	29.0
Oklahoma	63.9	59.6	58.6	58.9
Iowa	57.4	78.4	87.5	90.1
Ohio, Eastern	52.6	46.6	53.4	50.7
Missouri	50.7	66.8	69.6	74.2
Illinois	44.8	54.5	49.3	47.8
Kansas	42.0	54.9	74.5	70.7
Indiana	41.4	53.8	(a)	(a)
Pittsburgh†	41.2	39.8	(a)	(a)
Central Pennsylvania	39.1	50.2	78.0	76.0
Fairmont	35.3	44.0	45.6	37.4
Western Kentucky	32.5	37.7	33.7	28.4
Pittsburgh*	30.4	31.9	(a)	(a)
Kanawha	26.0	13.0	10.0	9.6
Ohio, southern	22.9	24.3	43.6	43.7

* Rail and river mines combined.
† Rail mines.
(a) No report.

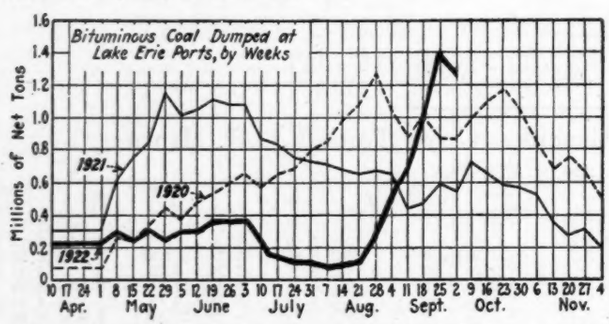
Car Loadings and Surplusages

Cars loaded:	All Cars	Coal Cars
Week ended Sept. 16, 1922	945,919	172,241
Previous week	832,744	139,570
Same week a year ago	852,546	165,511
Surplus cars:		
Sept. 15, 1922	4,476	17,614
Sept. 8, 1922	43,168	34,685
Same date a year ago	219,991	118,514

from 3,009 cars in the preceding week. That market, however, is dull, as industry has sufficient coal on hand to last well through the year.

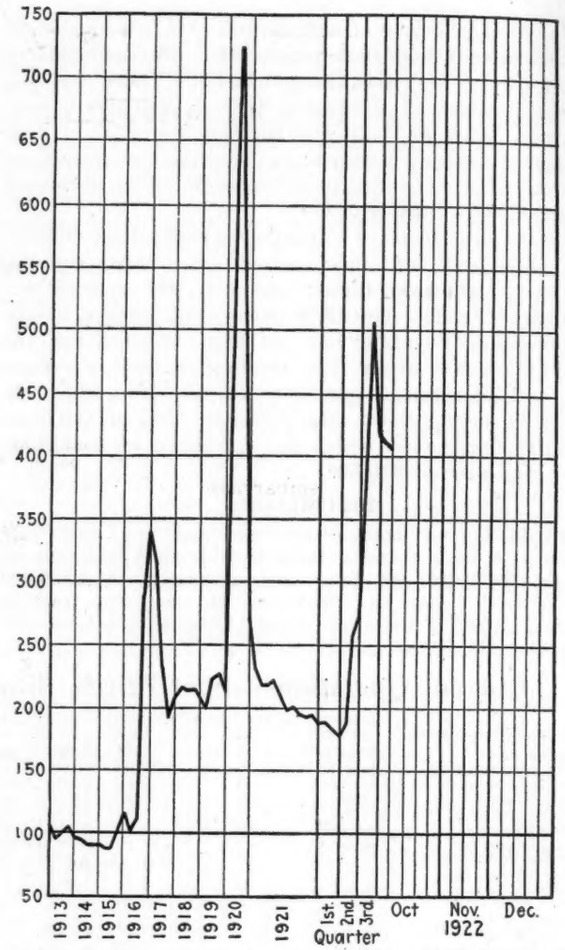
On the Duluth-Superior docks there were 6,786 tons of anthracite and 269,951 tons of bituminous coal on hand Sept. 15, compared with last year's figures of 826,436 tons of anthracite and 5,618,948 tons of bituminous; on the Ashland-Washburn docks 877 tons of anthracite and 44,177 tons of bituminous were on hand, as against 22,619 tons of anthracite and 238,923 tons of bituminous a year ago. On upper Lake Michigan docks there were on hand Sept. 1 of this year 49,102 tons of anthracite and 158,978 tons of bituminous, compared with stocks of 502,921 tons of anthracite and 2,162,149 tons of bituminous on these docks on Oct. 1 of last year.

Priority orders for the movement of coal are being employed only rarely. The Federal Fuel Distributor is asking the I. C. C. to issue such orders only in cases of real distress where it is impossible to relieve an acute fuel situation by any other means.



Hampton Roads dumpings were 285,635 net tons during the week ended Sept. 28, as compared with 297,600 in the week preceding. Congestion to the North and West is throwing more coal to this Tidewater and prices are soft.

Lake coal is now going forward at the highest rate in the history of the traffic. The week of Sept. 24 set the record with 1,453,684 net tons, but last week's figure of 1,241,086 tons is still in excess of any dumpings prior to this season.



Coal Age Index 404, Week of Oct. 2, 1922. Average spot price for same period $4.89. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

The total dumped for the year to date is 10,185,210 tons, as compared with 18,843,148 tons in the corresponding period of last year.

Numerous complaints are reaching Washington from coal operators who are not being given assigned cars. It is asserted that railroads generally are misinterpreting the I. C. C. service order and are assigning cars for railroad fuel. These complaints point out that it is flagrant discrimination when a few operators are allowed to absorb all the transportation in a coal-producing district. Several instances were cited where certain mines are receiving 100 per cent car supply whereas the complainant is being given only 20 per cent of the cars he requires.

ANTHRACITE

Production of hard coal was 1,856,000 net tons during the week ended Sept. 23. Preliminary reports for last week indicate an output of 1,800,000 to 1,900,000 tons. The approach to normal production, however, was checked in the last few days of September by a growing car shortage. Movement of loads is also slow and deliveries uncertain.

COKE

With beehive coke production increasing—135,000 net tons during the week ended Sept. 23—the car shortage has overshadowed the strike. It is now apparent that the strike will no longer be the dominant factor in curtailing the production of coke. The market is stiffer, furnace coke being in demand for domestic purposes, while foundry coke also is quotably higher.

Foreign Market And Export News

European Coal Markets Show Signs of Revival

France Feels Effect of Withdrawal of British Fuel for American Emergency —With Unfilled American Orders, British Prices Hold—Coal Shortage in Germany and Buying Power Crippled.

Foreign coal markets show some improvement. The emergency American demand removed an embarrassing volume of British offerings from Continental markets, stimulating prices and production. The French industry felt the effect of this immediately. British exports to France were stopped or greatly reduced and French mines cleared away their heavy pithead stocks with the disappearance of these competitive offerings.

Great Britain still has many unfilled orders for North America and producers are not inclined to reduce prices to attract Continental buyers. They feel that these orders, having been delayed for many weeks, will soon be forthcoming.

Germany is suffering from a coal shortage. Her buying power is reduced by the exchange rates and she must take steps to increase her production.

Prices Firm on Best British Coals; Dock Congestion Still Acute

Special Correspondence

There is more activity in the superior Admiralty coals and the best drys. Canada is still in the market and is now inquiring for 60,000 tons for Montreal delivery before the end of November. Continental demands are also good. With the exception of these quality coals, other descriptions show an easier tendency. The output during the week ended Sept. 16 dropped to 4,995,000 tons, according to a cable to *Coal Age*. This is the first week since Aug. 12 that production has been below 5,000,000 tons.

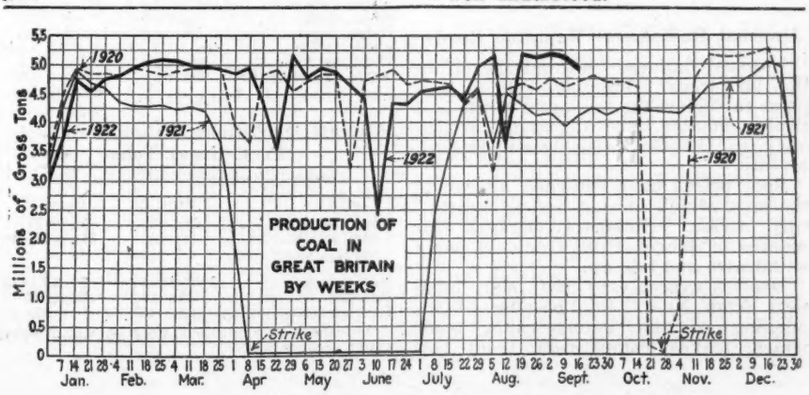
The position in the Welsh fields now is that the pits have an abundance of contracts to carry them into October. Leading operators are not inclined to make any cut in prices. On the other hand, Continental and South American buyers are holding back orders because they believe that now the heaviest American demand is over operators will have to reduce prices to get rid of their coal. The demand for the lower grades of coal is extremely poor and stocks are accumulating.

In the north of England, American inquiry is still heard, although there is not much actual business. Here again the chief operators are well sold up and have little to offer. The coke market is strong. Among the contracts recently fixed are 4,000 tons of second Durham gas coals for Malmö at 21s. 6d. f. o. b., 2,000 tons of gas coal for Esbjerg and 90,000 tons of Durham coking coal for Oxelsund at 20s. 6d. f. o. b. An inquiry was made for 30,000 tons of Durham coking coals for immediate shipment, but the quotations were too high and the inquiry was withdrawn.

The new arrangements for the loading of coal cargoes at the Northeastern ports, under which two hours' overtime are worked at the end of the second shift, is proving a success. Congestion of the docks has undergone no appreciable relief; in fact, the conditions are so unsatisfactory that a considerable amount of trade is being diverted from these to other ports.

Under the circumstances, it is likely that a further attempt will be made to induce dockers' representatives to agree to a reversion to the three-shift system. When the two-shift system was introduced during the war, it was provided that there should be a return to the old arrangement if the volume of trade justified such a move. It is undeniable that the time has arrived for the change. Thousands of tons of shipping are being held up, thereby incurring heavy losses in demurrage, and siding are crowded with loads.

The result of this congestion has already been felt at some of the collieries, which have been forced to close down temporarily owing to wagon shortage. The aggregate loss to the miners in wages is very considerable, and their resentment against the attitude of the dock workers' officials can be well understood.



French Coal Is in Good Demand; Miners Deliver Ultimatum

Special Correspondence

French coal is finding a ready market, with the exception of the Saint-Etienne field and other minor districts of the Center of France.

The National Congress of French Miners, which met recently at Angers, voted a resolution declaring that should the French government or the French Parliament manifest the intention of modifying any of the fundamental provisions of the Act of June 24, 1919, on the eight-hour working day in mines, a general strike of French miners would be the immediate response. The possibility for intensifying the present conflict between operators and men implied in such a resolution is quite evident.

FRENCH PRODUCTION IN JULY

District	Metric Tons
Nord, non-devastated mines	584,795
Nord, devastated mines	651,544
Saint-Etienne	274,670
Lyons (Blansy, La Mure, etc.)	215,111
Minor Central fields	99,225
Southern	337,423
Minor Western fields	9,224
Ronchamp mine (Nancy)	7,665
Lorraine	345,457
Total	2,525,114
Year to date	18,085,498

During July France also produced 85,424 tons of coke and 226,545 tons of patent fuel. The Sarre output was 988,242 tons of coal and 22,049 tons of coke. Her pit-head stocks were 593,810 tons of coal on July 31, as compared with 619,285 tons on June 30.

FRENCH IMPORTS AND EXPORTS IN JULY AND YEAR TO DATE

IMPORTS

	Metric Tons July	Metric Tons Jan.-July
Coal		
Sarre	260,183	1,991,316
Great Britain	915,824	6,882,264
Belgium	179,950	1,427,818
United States	4,120	23,255
Germany	240,107	2,212,578
Netherlands	30,706	425,527
Other countries	116	3,692
Total July	1,631,006	12,966,450
Total June	1,828,938	.....
Coke		
Great Britain	1,095	37,196
Belgium	40,801	305,494
Germany	381,520	2,427,281
Other countries	24,643	106,593
Total July	448,059	2,876,564
Total June	427,833	.....
Paten' fuel		
Great Britain	20,613	89,399
Belgium	68,634	491,835
Germany	13,673	278,807
Other countries	424	2,396
Total July	103,344	862,437
Total June	105,284	.....

EXPORTS

Coal, to		
Belgium	20,467	126,234
Switzerland	52,949	283,301
Spain	205,063	205,210
Italy	2,469	13,956
Germany	31,552	124,324
Austria	.....	292
Other countries	21,874	153,202
Bunkers	10,728	59,719
Total coal	345,102	966,238
Coke	26,726	238,268
Total patent fuel	5,239	53,538

The comparatively heavy shipments to Spain in July (205,063 tons) were due to the strike of the Austrian coal miners.

The quantities of fuel to be supplied by Germany on reparation account during September and October have been divided as follows: France, 1,052,000 tons; Luxemburg, 111,000 tons; Belgium, 227,000 tons; and Italy, 210,000 tons.

British Coal Exports in August

Country	Gross Tons 1920	1921	1922
Russia	12,625	50,281	90,611
Sweden	125,543	160,089	236,203
Norway	76,009	103,312	104,765
Denmark	101,353	287,110	268,944
Germany	....	124,524	1,165,228
Netherlands	6,112	248,646	431,929
Belgium	34,962	45,964	238,332
France	801,893	715,021	939,588
Portugal	32,539	80,778	65,629
Azores and Madeira	5,131	.....	7,598
Spain	18,229	116,992	176,163
Canary Islands	27,357	18,427	37,900
Italy	195,200	380,241	477,521
Austria, Hungary	2,772	.....	.....
Greece	4,594	18,524	21,322
Algeria	25,944	53,223	90,057
French W. Africa	4,801	3,714	9,467
Portuguese West Africa	19,897	14,248	13,382
Chile	3,165	186	90
Brazil	7,426	40,520	98,486
Uruguay	10,622	20,947	41,563
Argentine Republic	17,768	116,134	118,953
Channel Islands	12,524	13,797	10,432
Gibraltar	108,372	49,810	43,108
Malta	59,207	65,659	12,031
Egypt	78,897	114,825	96,352
Anglo-Egypt. Sudan	.....	.....	.....
Aden and Depend.	.....	12,455	7,125
British India	.....	53,439	61,972
Ceylon	....	100	5,218
Other Countries	54,461	194,241	1,276,152
Total August	1,847,403	3,103,207	6,146,121
Total July	2,096,996	816,320	5,063,763

QUANTITY AND VALUE

	Gross Tons August	1st 8 Mos.
1920	1,847,403	18,375,932
1921	3,103,207	9,944,975
1922	6,146,121	38,393,844
	Value	
1920	£8,041,037	£71,869,961
1921	5,668,594	22,661,803
1922	6,873,551	43,300,852

Germany Seeks Reduction of Reparations Tonnage to Relieve Shortage

Special Correspondence

German industry generally is suffering more and more from the loss of the valuable coal measures alienated to other countries and intensified by the deliveries required for the Allies. Interesting efforts, as is known, are being made in the country to get greater relative value out of the coal available.

Production of coal in the Ruhr region during the week ended Sept. 17 was 1,847,000 metric tons, according to a cable to *Coal Age*, as compared with 1,761,000 tons in the week preceding.

The following increased prices for coal are in force as from Sept 1:

	Marks per ton including coal and turnover taxes Price on Aug. 1	New price
Fat Coals		
Run of mine	1,513	4,105
Best mixture	1,700	4,616
Lump	1,996	5,420
Nut, 1, 2, 3, washed	2,041	5,543
Coking coal	1,569	4,214
Gas and Flame Coals		
Flame, run of mine	1,513	4,105
Gas flame, run of mine	1,588	4,310
Gas, run of mine	.....	.....
Lump, 1	1,996	5,420
Nut, 1, 2, 3, washed	2,041	5,543
Slack, washed	.....	.....
Lean Coals (Eastern Basin)		
Run of mine	1,498@1,513	4,065@4,105
Best mixture, 50 per cent	1,642	4,457
Lump	2,052	5,571
Nut, 1, 2, washed	2,285	6,205
Slack, unwashed	1,424	3,863
Coke		
Large 1	2,230	6,018
Foundry	2,315	6,257
Broken 1, 2	2,639	7,170

Production during July, excluding the Sarre, was 9,590,000 metric tons, as compared with 10,870,000 tons in July, 1921.

A German journal gives the wording of the resolution adopted at the meeting of the International Miners' Congress, held in Frankfurt, on the subject of Germany's shortage of coal as follows:

The International Miners' Union at its meeting on Aug. 11, 1922, confirms the previous resolutions of the Amsterdam Workers' International on the reconstruction of the devastated regions, without adopting a position on the after-war policy. In view of the great disorganization in the labor market and the bad labor conditions in the mines in all European lands, and the consequent resulting extensive scarcity, particularly in Germany, it expresses the opinion that the decisions of the Spa Agreement respecting German coal deliveries to the Allied countries are responsible to a certain degree for the present difficult position, and resolves to request the Reparations Committee to receive a deputation from the International Miners' Union for the purpose of bringing about a variation in the Spa Agreement to ease the present economic position in the mining business.

Coal Paragraphs from Foreign Lands

ITALY.—The market continues dull. Car supply is somewhat better. There is no demand from the mills and railways. Stocks have increased to about 80,000 tons and more steamers are expected soon. The prices are: Bengal 1st, Rs.28; Bengal good 2nd, Rs.26@Rs.27; British, Rs.38; African, Rs.27½.

SPAIN—The first deliveries of Asturian coal for Barcelona after the miners' strike have put in an appearance. Orders have been numerous in consequence of the low level of stocks and the rise in quotations for foreign coal. In a certain number of mines the return of the strikers has not yet resulted in a full output, owing to the necessity of restoring workings.

BELGIUM.—The market is improving every day. Coke is very firm, especially metallurgical coke. Briquets are also strong. The state has laid in large stocks and the partial revival of navigation at Antwerp has led to an improvement in demand.

Hampton Roads Pier Situation

	Week Ended Sept. 21	Sept. 28
N. & W. Piers, Lamberts Point:		
Cars on hand	430	1,235
Tons on hand	72,808	75,226
Tons dumped	127,122	113,785
Tonnage waiting	63,650	27,600
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	906	923
Tons on hand	52,600	54,500
Tons dumped	93,974	70,104
Tonnage waiting	48,509	7,509
C. & O. Piers, Newport News:		
Cars on hand	1,051	910
Tons on hand	52,500	45,500
Tons dumped	44,619	71,143
Tonnage waiting	5,490	3,850

Unusual Dullness at Hampton Roads

Unusual dullness featured the situation last week. Dumpings fell off to a point far below the minimum in the last twelve months, and demand, particularly in the coastwise trade, receded rapidly.

Spot prices have returned almost to the level which existed before the railway strike. Steamers engaged for months in the coastwise trade are being withdrawn and laid up.

Dealers expect very little more business from New York, because of the opening of the Pennsylvania trade which makes competition from this port unfavorable. Some revival in the export trade is being predicted, as indicated by the sailing of several foreign ships with coal, made possible by declining prices.

Export Clearances, Week Ended Sept. 28, 1922

FROM HAMPTON ROADS:

	Tons
For Atlantic Islands:	
Nor. S.S. Juan, for Kingston	1,067
For Cuba:	
Am. S.S. Munrio, for Havana	5,534

United States August Coal Exports

(Gross Tons)

	August 1921	August 1922
Exports, bituminous coal:		
By rail to:		
Canada	1,319,087	373,859
Mexico	13,604	6,052
Total	1,332,691	379,911
By-vessel to:		
Newfoundland	.....	1,080
British West Indies	7,856	15,801
Other West Indies	7,355	8,750
Panama	9,611	9,595
Cuba	48,318	10,629
Total	73,140	45,855
United Kingdom	2,442	.....
Denmark	3,887	.....
France	16,068	.....
Italy	87,399	.....
Norway	12,487	.....
Sweden	10,394	.....
Total Europe	132,677	.....
Argentine	47,835	.....
Brazil	43,419	.....
Chile	1,022	.....
Total South America	92,276	.....
Egypt	21,399	.....
Other countries	42,907	34
Total bituminous exports	1,695,000	425,800
Total anthracite exports	373,005	28,704
Total coke exports	18,029	26,121

Pier and Bunker Prices, Gross Tons

PIERS

	Sept. 23	Sept. 30†
Pool 10, Philadelphia	$8.25@$8.75	*$7.50@$8.00*
Pool 11, Philadelphia	8.00@ 8.50	*7.25@ 7.75*
Pool 10, New York	8.00@ 8.25	*7.75@ 8.00*
Pool 11, New York	7.75@ 8.00	*7.50@ 7.75*
Pool 1, Hamp. Roads	7.90@ 8.15	*7.75@ 8.10*
Pools 5-6-7 Hamp.Rds.	7.90@ 8.15	*7.75@ 8.10*
Pool 2, Hamp. Rds.	7.90@ 8.15	*7.75@ 8.10*

BUNKERS

Pool 10, Philadelphia	$8.50@$9.00	*$8.00@$8.50*
Pool 11, Philadelphia	8.25@ 9.00	*7.75@ 8.25*
Pool 10, New York	8.30@ 8.55	*8.00@ 8.25*
Pool 11, New York	8.00@ 8.30	*7.75@ 8.00*
Pool 1, Hamp. Rds.	8.00@ 8.25	*7.85@ 8.10*
Pool 2, Hamp. Rds.	8.00@ 8.25	*7.85@ 8.10*
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	41s. 6d. f.o.b.	41s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	45s. 6d. f.a.s.	45s. 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b.	42s. 6d. f.o.b
Welsh, Las Palmas	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. t.i.b.	52s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	43s. f.o.b.	*40s. f.o.b.*
Welsh, Port Said	51s. 6d. f.o.b.	51s. 6d. f.o.b.
Welsh, Oran	40s. f.o.b.	40s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	46s. 6d. f.o.b.	46s. 6d. f.o.b.
Welsh, St. Vincent	46s. f.a.s.	46s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Sept. 23	Sept. 30†
Admiralty, large	26s. 6d.	**26s.@27s.**
Steam, smalls	16s. 6d.	**16s.@16s. 6d.**
Newcastle:		
Best steams	24s@24s.6d.	**24s.6d.@25s**
Best gas	23s.9d.	**23s.@24s.**
Best bunkers	22s. 6d.	**23s.**

†Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Consumers Apparently Set On Depressing Prices

Market Continues to Reflect Indifference of Users—Car Shortage Such That Lower Prices Are Unlikely, Save Temporarily—Fuel Comes from Divers Sources.

The consumer is close to a buyers' strike in his determination to depress prices. The market so far has retained its indifferent aspect, from the consumers' standpoint at least. There is, however, a growing feeling that the car shortage has reached such proportions that lower prices cannot be expected except as a temporary measure. Coal men realize that a slight return to buying would quickly wipe out spot offerings and they are extremely cautious about quoting futures.

Coal from all sources can be had at lower figures than last week. British cargoes have sold off, Southern coals are not so easily salable and Tidewater piers have a good supply at hand.

CENTRAL PENNSYLVANIA

Car shortage is seriously curtailing production. Figures show a loss in output of 700 to 800 cars daily.

The situation is fairly good so far as the Pennsylvania is concerned, particularly in the eastern part of the district, but farther west where other roads enter the field, it is exceedingly bad, not only due to the scarcity of cars but also to the lack of motive power.

Spot prices are as follows: Pool 11, $3.75@$4; Pool 10, $4.10@$4.25; Pools 9 and 71, $4.25@$4.50, and Pool 1, $4.50@$5.

BALTIMORE

Prices here are well maintained, especially as to the better grades, as the continued car shortage is holding down production and delivery. While industries have been running on the hand-to-mouth basis, or at least have made no attempt to stock up at the high prices prevailing, the near approach of colder weather is making some of them consider this necessary. Purchasing agents are showing greater desire to get under cover, and this has meant that little coal of the better grade is to be had below $5.25.

Heavy importations of British coal continue to be received, and in fact there was one diversion of a cargo to New York City after it had been reported as reaching this port. During September fourteen steamers arrived here with a total of 79,895 tons of British coal. The steamer diverted to New York City after arriving in Baltimore was an American ship, with a total of 8,232 tons cargo.

FAIRMONT

Transportation conditions are somewhat better but it will be some time before the B. & O. will be able to handle anything like normal quantities and congestion is still so general that the movement to the West is badly upset, and embargoes have been continued. Much of the output is moving to Eastern markets. Mine run is quoted $4@$5 a ton.

PHILADELPHIA

It is an indifferent market, at least from the consumer's standpoint, as many concerns needing coal are simply holding off, insisting that their guess as to much lower coal is bound to come true. And so far they do seem to have the best of it.

All houses are extremely cautious about promising delivery, as they fully realize how serious is the rail situation. Naturally the consumer reasons that if the operator urges him to take coal it must be plentiful, but the actual truth is that the small floating supply that is available for a spot market is extremely small, and would be wiped out almost in an instant with but only a slight increase in ordering.

On the Pennsylvania, the mines east of Altoona were reported receiving the best service this week, while the New York Central was quoted as in trouble. The B. & O., out of the Fairmont region, has not improved, and shipment via Connellsville from Somerset County is now in almost the same condition.

There has been some decline in prices, and in some instances there have been deep cuts due to the necessity to move a limited tonnage for some reason or another. Producers predict that the lowest point has been reached, but this is very much of a moot question, with some consumers close to a buyer's strike in their anxiety to depress the market.

UPPER POTOMAC

Injunction proceedings in the Georges Creek field have been dropped under an agreement with striking miners who have promised not to molest the miners who desire to return to work and the feeling exists that this will go far to break the strike. Considerable progress has been made in getting back to normal in the Upper Potomac, where there is no prospect that the labor status will be changed.

NEW YORK

Coal is becoming so plentiful that contracts are being talked of and in some instances have been closed at $3@$4.50, the latter figure having to do with Pool 10 quality coal.

Demand shows no improvement. Buyers are apparently willing to take their chances with the poor car supply and the approaching winter months before them. They believe prices are going to be lower.

The slowing up in the receipt of British coal is noticeable. During last week about 80,000 tons in ten vessels were reported. At the office of the Fuel Administrator it was announced there was a cargo in the harbor which could be bought to sell at about $10. At about the same time it was announced by dealers there was a cargo of foreign coal at a Brooklyn dock which was being offered at $10.50 per ton on wagons. Local houses were offered coal anchored off Boston on a basis of $7 per ton, it being stated there were in the neighborhood of sixteen cargoes awaiting buyers.

Southern coals are not causing much competition here, prices being about the same as for coals usually found at this Tidewater.

Activity along the line prevents heavy shipments to Tidewater. However, coal is coming forward in sufficient quantities to take care of the local demand. On Sept. 29 there were 1,583 cars reported at the local docks, a gain of 200 cars over the day previous.

West

DENVER

The labor situation is much improved with the readjustment of the wage scale. Cars are still scarce and there is a great lack of power to move the coal.

Denver is not suffering from a coal shortage, as it is close enough to the mines to get a fair supply of both bituminous and lignite coal. Prices are the same at the mines as previously when the same wage scale was in effect. Retail prices in Denver are 75c. lower than a year ago on account of lower freight rates.

SALT LAKE CITY

There is very little domestic demand. People are waiting to see what the grand jury, now in session, will decide about alleged price fixing by operators and dealers. A prominent dealer, who is also interested in the wholesale end of the business, states that the retailer, in spite of the contention that the raise from $9 to $10 for lump coal has permitted him to draw an abnormal profit, is getting 50c. a ton less on domestic sizes and 25c. a ton less on slack than he did a year ago.

Canada

TORONTO

A little anthracite is now coming forward and is being sold in small lots, as low as $15.50, the old price. There is also a limited quantity of Pocahontas on the market at $16.50. The Welsh coal bought by the city is being held in reserve for emergencies.

There is plenty of bituminous coal obtainable and it is being freely bought by domestic consumers in small quantities until anhtracite becomes generally available. Quotations are variable but average $10.75 for ¾-in. lump and $10 for slack, wholesale, f.o.b. destination.

The city on Sept. 27 commenced the distribution of semi-anthracite recently secured from Pennsylvania. There was a rush of orders and during the day 1,100 tons were disposed of in one-ton lots at $15.50 per ton. [The only semi-anthracite produced in Pennsylvania is found in Sullivan County.]

Anthracite

Diverse Independent Prices Disturb Retail Dealers

Little Coal Offered at $8.50—Range Now $9.15 @ $13 on Family Sizes, Pending Adjustment—Canadian Buyers Take Tonnage Available at High —Obstacles to Production.

Retailers are upset by the variety of independent quotations being made. Very little of this coal was offered at the $8.50 price which had been established by the Pennsylvania commission and prices now range $9.15@$13 on the family sizes, following the commission's recommendation that prices be kept within the limits fixed by the Fair Practice Committee in 1920, pending further consideration and adjustment. Canadian buyers are appearing in large numbers, taking any coal available at the high of the range.

Production is being slowed by spotty car supply and some labor shortage. Loads are moving slowly and deliveries are hampered by unsatisfactory transportation conditions. Steam coals are selling off.

BALTIMORE

Some receipts have been recorded, but the run is not heavy and a number of dealers are still without fuel to distribute. The coal coming in is practically all of the independent variety, and if it were not for the fact that the dealers are glad to get any kind of coal, there would be undoubtedly considerable complaint over the fact that a large proportion of the shipments are badly prepared.

Pending more definite information as to wholesale prices members of the Baltimore Coal Exchange have taken no step toward recommending prices. The majority of dealers who have any coal to sell are asking $15.75 a gross ton for No. 1 hard; $16 for No. 2, 3 and 4 (nut); $16.50 for Sunbury; and $17 for Lykens Valley.

BUFFALO

Coal is coming in perhaps as fast as it was expected to and if the present reported distribution is kept there will be a fair amount in consumers' cellars before cold weather sets in. Distribution is as a rule one ton to a house. A price of $13.10 has been made on grate by one of the larger retailers, $13.20 on egg, and $13.25 on stove and chestnut.

There is so much more demand for independent coal than can be furnished that there is great temptation to ask wildcat prices. The authorities do not seem to have obtained control of that branch of the trade yet. Prices of $12.50@$13.50 have been made at the mines.

So far one cargo has been loaded, 6,000 tons by the Lehigh Valley Co., for Chicago. Two other cargoes have been chartered. Other companies ought to be in the field by another week.

BOSTON

Practically all the large Tidewater retailers have received their first cargoes and all-rail shipments have been spattered around about as well as could be managed under the various car-supply complications that prevail.

Retail distributors are working over their "applications" and making deliveries of a ton or so on the old orders. Boston dealers are charging $15 for all sizes down to pea, much as they did in the spring.

It will be interesting to watch sales of independent coal during the next month or so. Quotations range $9.50@$12.50, f.o.b. mines, but it is not easy to see how retailers can pay those prices without undergoing serious losses before the season ends.

ANTHRACITE FIELDS

Production would have almost reached normal this week if it had not been for the car shortage. This shortage seems to have hit the mines on the D. & H. and the D. L. & W. more than on any of the other roads.

It seems as if the miners had not had enough of strikes. An outlaw strike was called at the Pettibone Colliery of the Glen Alden Coal Co., because some of the men had not paid their assessments to the union and because some of the firemen were not members of the union. It seems strange that after a long idleness and only sixteen days of work the men would be in a position to strike or that they would want to strike. The miners are talking of backing the railroad shop men, and it is intimated that a sympathetic strike might be called.

NEW YORK

Independent producers as well as some of the larger companies have difficulty in disposing of the steam coals and in some instances buyers of independent domestic coals are asked to include some of the smaller coals in their orders.

Many smaller independent operators are selling their product over the counter, buyers from various sections of the country and Canada spending most of their time at the mines. Business is being done mostly on a cash basis, the coal being paid for before shipment.

Heavy stocks of bituminous coal in the cellars and bins of many industrial concerns and in some other places where the anthracite steam coals have been used, as well as the installation of oil heating apparatus is given as one reason for the lack of demand for the small coals at this time.

Retailers are getting a fair supply of domestic coals and are careful to follow the orders of the State Fuel Administrator regarding distribution. While some are quoting $13.50, regarded as a fair price by the Fuel Administration officials, others are quoting as high as $17. Complaints are being made to the Fuel Administrator of attempted profiteering and these are being investigated.

PHILADELPHIA

While the matter of price is still much of an annoyance to the retail dealer, nevertheless his chief concern is to get sufficient coal to meet the orders he has on his books. Consumers are becoming insistent that they be given preferred treatment, and at the same time complain of the price charged.

Larger retailers are for the most part asking $14.50 for egg, stove and nut, and $11.50 for pea. There is also a considerable number who quote $14 for the large sizes and $11.25 for pea. Perhaps a few dealers did charge $15 for prepared coal during the first week they had coal, but it is doubtful if any one is charging this price now.

At this time there seems to be much more than a rumor of car shortage at the anthracite mines. So far the mines in the southern field have not been affected, but to the north there has been some lost time on this account. All roads have issued drastic orders against loading line equipment to foreign roads, and have requested shippers to take some box cars.

All companies have an active market in buckwheat, rice and barley, and of the former size there is very little to be had on the spot market, with a fair amount going into the domestic trade.

South

BIRMINGHAM

Demand for steam coal is only moderate, consumers appearing not concerned except in regard to movement and car supply, which continues to be the principal disturbing factor. Any shortage in coal supply is attributable to these hindrances which are holding production down to a figure which closely approximates the demand.

However, there is a strong demand for lump and other sizes. The supply of lump is necessarily depleted largely by the easing off in the steam requirements. When prices were at top notch during the recent heavy demand from Western and other foreign territory little domestic coal was produced at the steam coal operations, hence this served to curtail the movement.

Quotations are practically stable at the maximum fixed schedules, although limited amounts of steam fuel have been sold during the past week somewhat under the figures above referred to, though it is not thought there will be any very material concessions from these prices. Open market will prevail on domestic coal in many instances where contracts with dealers do not extend beyond September.

VIRGINIA

The pendulum has begun to swing in the direction of a somewhat larger production, bringing the output up to 144,000 tons. Cars are beginning to get more plentiful, with C., C. & O. mines producing 62 per cent of capacity and with production on the Southern also on a larger scale. N. & W. supply, however, is not quite as adequate.

Chicago and Midwest

Steam Market Remains Weak in Middle States

Gluts Here and There Force Screenings Prices Lower — Domestic Demand Fair—Rail Service Improves Slightly in Certain Regions.

Steam coals continued in no demand during the past week, everywhere except in Kentucky and even there the call was not heavy. It weakened enough in St. Louis to send heavy shipments of screenings up to be dumped on Chicago where that class of coal got into demurrage difficulties by the hundreds of cars and sold down to $2. Domestic demand continues fair in all regions, although there is so much protest against high prices that nobody is buying heavily.

Some fields have been getting better railroad service. The L. & N., in Kentucky, has raised its average car service from about 15 to 30 per cent. Northern and central Illinois service is at least 50 per cent and even in the Carterville region of southern Illinois there is some improvement, but most of the southern Illinois mines are complaining of discrimination against them in favor of other fields.

SOUTHERN ILLINOIS

A slightly improved car supply is the most interesting development of the week in the Carterville field. The efforts of the roads to give coal the preference in movement is getting some results. There are orders on hand for domestic sizes that will take 90 days to clean up. The steam sizes are giving some worry. This has even affected the minerun market. Steam users are not stocking up. Somehow, somewhere, they have a hunch that "coal is coming down." Motive power is not far from normal, but the Illinois Central has shown rapid strides in getting back to nearer normal than any other mid-west coal carriers.

Miners who have been away since last summer are beginning to drift back and the mines are filling up. Very few minor disputes are reported that cause loss of time. Somewhat similar conditions prevail in the Duquoin and Jackson fields that depend on the Illinois Central alone for cars. The Mt. Olive field shows up with better car supply on the trunk lines, but short on the local coal roads, due to congestion in the St. Louis terminals. A good movement is noted to Chicago and Omaha markets, with some to Kansas City, although the bulk is going to St. Louis. All mines show a steady increase in daily tonnage.

The Standard field is as usual afflicted with the thought that "coal is coal" and that anything goes. A better car supply may bring normality and save operators there from being the first "objects" of federal investigation.

INDIANAPOLIS

Prices continue about the same, though there has been some easing off on some grades of foreign mined coal. Indiana coal seems to be as strong as last week, with prices ranging $4.50@$5 and more. Because of rail conditions the Indiana mines have been able to work only about half time.

The utilities of the state, generally the biggest buyers, are purchasing spot coal in just as small quantities as possible. The utilities are making a determined fight to eliminate brokerage fees. Cooler weather made the retail demand a little more active. One retailer in Indianapolis has announced he will sell no more than three tons to any one customer and officials of the retailers' organization are urging purchases in small quantities.

CHICAGO

Few changes are noticeable in the Chicago market since last week. Steam sizes continue a drug with the heavy consumers still making a success of their policy of holding out and picking up coal that gets into trouble. The heavy consignment shipments that have been coming to this city have amply filled their needs.

The prices paid have varied from $3 on good Illinois and Indiana stuff down to as low as $2 on some northern Illinois and Standard screenings and the effect of this has been to compel a softening of the circular price list on screenings, for circular no longer can be maintained on steam coals. Buyers have been hammering so hard on steam prices for so long that coal men are now charging many of them are refusing contract shipments in order to further embarrass the producers.

Demand for domestic sizes continues fairly strong and likely to burst upward at the first cold snap, carrying prices with it. Just now there is little difficulty in getting $5.50 for good 6-in. lump from both the Fourth Vein field of Indiana and the southern Illinois counties. Smaller sizes of domestic coals are also strong and bring $5@$5.50. Very little mine run is shipped except on contract. Screening plants are fully justifying their investment and operating costs. They greatly reduce the amount of coal that must either be stored on the ground at the mine or be sold at a loss.

LOUISVILLE

As a result of better production of steam coal in all producing sections the shortage is being rapidly relieved, and the big question now is in supplying retail dealers. In some sections retailers are buying freely but in Louisville, however, it looks as if the retail business will be late and heavy. Operators are producing very little prepared size coal. However, with the let-up of steam demand there should be better production, especially with a better car supply, but until Lake demand is filled prepared production is not promising.

Operators are asking a margin of about $2 a ton between eastern Kentucky lump and mine run, which is causing retailers to do a lot of beefing. Eastern Kentucky coals start at $5 for mine run and screenings and go as high as $8 for lump. Western Kentucky starts at $3.50 for screenings and goes as high as $6 for lump.

Locally retail prices are $10.50 for eastern Kentucky or West Virginia lump, $10 for mine run or screenings, $9@$9.50 for western Kentucky lump, and $8.50 for mine run or screenings. Eastern Kentucky this week reports around 30 per cent car supply—the best for some weeks—and there is a chance of three days operation. Western Kentucky reports 15 to 30 per cent, the L. & N. doing better, and averaging close to 30 per cent.

ST. LOUIS

Seasonable weather is helping with the domestic demand. This however, is not as pronounced as was expected. Dealers complain about too much "socialistic" advice to the public "a la Ford" from sources ignorant of coal conditions. This has resulted in delayed buying and small orders.

Carterville tonnage is small. Plenty of substitution of inferior coals by jobbers is reported. Mt. Olive is best. with poor call for Standard, whose price is high. Small town domestic buying is delayed. Low priced crops and poor business generally, due to recent labor troubles, make high-priced coal a luxury. Steam locally is slow. Buying is light and is forcing prices down, and aside from the public utility plants storage is not marked. Country steam is somewhat similar. Oil retains its hold locally and pretty well throughout the St. Louis outlying territory. The Chicago market is the dumping ground for steam sizes that won't sell here.

Coke is scarce and hard to get and there is no promise of West Virginia smokeless or anything from Arkansas. A few cars of anthracite have been shipped, but the tonnage will be small and not a factor. Retail prices in St. Louis are: Carterville lump, egg and nut, $9@$9.50; Mt. Olive, $7.50; Standard, $6.75.

WESTERN KENTUCKY

It is reported that retailers are demanding prepared sizes all the way from Michigan and Wisconsin to Mississippi, and that prices are stronger, there being very little if any prepared at under $5 this week, with the price going as high as $6 in western Kentucky. Steam coal has slipped, as demand is a little off and screenings are in better supply. Some screenings have been reported at $3.25, but $3.50@$3.75 is closer to the market. Minerun is weaker and is quoted at $3.75@$4, with some houses quoting high at $4.25.

Steam coal from now on is not likely to bring such fancy prices, as demand will be largely for lump to fill up domestic consumers. This will result in considerable supplies of screenings, and weaker prices, as there is no longer a heavy outside demand for minerun for railroad use, and many industrial concerns are going back to screenings as the price works down.

Eastern Inland

Consumer Waits, Placing Orders at Receding Prices

Car Shortage Is Controlling Factor—Curtailing of Free Coal Prevents Further Decline—Load Jam Causes Temporary Embargo to Lakes—Seamen's Strike Feared.

The consumer continues to play a waiting game and each order placed last week went at a lower price. Car shortage now controls production and the curtailed amount of free coal offering is all that holds spot prices from a further decline. The only market strength is shown in domestic coal. Steam buying is hand to mouth, industry refusing to compete with Lake buyers for current offerings, in the belief that with the close of navigation the release of this tonnage will bring about an easier market.

A jam of loads has caused temporary embargoes to the Lakes. Dumpings are still the highest in the history of the traffic and while the seamen's strike is not yet felt the trade fears its possible effect at the rush point of the season.

COLUMBUS

Buying is limited to present needs only. With propaganda on the part of the National Chamber of Commerce and other agencies advising the people to hold off, orders are placed for what is actually needed.

This applies particularly to the domestic trade and dealers are buying in limited quantities. Retail prices are holding rather firm around $7.50 for mine run, and $8@$8.75 for lump, Hocking Valley coal. West Virginia splints are selling around $8.75@$10.50, while Pocahontas when obtainable is quoted at $11.

There is a setback in the Lake trade due to the embargo announced as the result of the threatened seamen's strike. There was a fair accumulation of coal around lower ports and with the embargo a good tonnage will be available for commercial purposes. Loadings at the Toledo docks of the H. V. Ry. during the week ended Sept. 27 were 177,681 tons as compared with 164,570 tons the previous week, making a total of 2,326,404 tons for the season.

CLEVELAND

Consumers continue to play their waiting game. So far they have been on the winning side. Prices have been slipping steadily and each new order has been obtained at lower quotations. As for the suggested prices of $3.10@$3.25, which is being talked of as likely to be adopted by the state fuel commissioner as the official fixed price, operators maintain such a scale is ridiculous. If the above mentioned prices are fixed, operators say they will be compelled to sell their coal out of the state by rail, or shut down. The lake trade is paying $4.25@$4.50.

Retail dealers are waiting for anthracite and Pocahontas. The former is extremely scarce and is not expected to be received in any quantity for the rest of the year. The situation with regard to Pocahontas is nearly as bad and little of it is to be had. Car shortages are complicating the situation. Lake shipments are being speeded.

NORTHERN PANHANDLE

Much of the output is going to the Lakes but there is also an excellent demand in Northern markets and a large tonnage is being utilized as railroad fuel. There have been no further developments in the labor situation and it is now largely a question of securing cars and of having coal moved. The B. & O. has been greatly hampered in getting coal to the Lake, owing to poor motive power.

DETROIT

Very little improvement is apparent in the volume of bituminous coal coming into Detroit. This has not been productive of a very active demand, however. Many industrials are showing little interest and are drawing from reserves in the expectation of a lower scale of prices. Retail inquiry is not urgent.

Hocking lump or egg is quoted $6.50, while mine run is $5.25 and slack, $5. Fairmont and Pittsburgh No. 8 are offered at about the same price. West Virginia or Kentucky lump and egg is $7, with mine run or slack at $5.50. Smokeless mine run is $6.50.

Anthracite is arriving in small quantity. Shipments from some of the independent operators are reported to be bringing $12@$14 at the mine. A mine price of $14, with freight of $4.66 added and including a margin for the dealer would make the anthracite cost around $20 to the consumer.

PITTSBURGH

Production is at substantially the same rate as formerly. Car supplies are limited all around, but are much more pronounced on some divisions than on others. The Pennsylvania has declared an embargo, Oct. 2 to 11, on all receipts from connecting roads, to go east, except coal, provisions, etc. Thus there is congestion, but apparently the coal consignees who had priorities are supplied with all the cars they can unload.

The market is a trifle easier. Coal buyers on the whole are showing a strong disposition to limit their purchases to cover immediate necessities only. There is evidently a general feeling that prices will be lower later. In particular the opinion is held that ending of the Lake season will make a great difference. Producers and dealers think buyers are placing entirely too much dependence on this factor and that the market will be tighter instead of easier. Prices are shown in the Weekly Review.

EASTERN OHIO

While mines actually worked from 8 to 10 per cent less during the week ended Sept. 23, than in the preceding week, the output was increased 15,000 tons, thus indicating that the mines are getting back into full swing and that the problem is now one of transportation. Tons produced amounted to 134,000 and operations were at the rate of 55 per cent of capacity.

Since the return of the striking shopmen to their jobs improvement is discernable but due to the heavy increase in general traffic railroads are now finding it necessary to invoke temporary embargoes in order that terminals may not become wholly congested. During the week the B. & O. placed an embargo against further shipments of Lake coal to Lorain until the clearance of at least part of the accumulation on hand.

Domestic consumers are manifesting considerably more interest in the matter of filling their bins. However, with smokeless fuel difficult of procurement because of traffic congestion, prices continue strong and retailers are reluctant to store much of this fuel.

Steam demand is negligible and inquiries few. The fuel supply of industry may be said to be on a hand-to-mouth basis. Spot prices have receded further under this status of the market. It is likely that no storing will be attempted until after the close of Lake navigation.

Receipts of bituminous coal at Cleveland during the week ended Sept. 23, were the largest of any week in months. Aggregate receipts were 1,273 cars as compared with 868 cars the preceding week. Industry received 1,026 cars; retail yards, 247.

A new high record has been made in the quantity of cargo coal handled over the lower docks. During September up to the 28th the docks had dumped 75,000 cars, as compared with 38,000 cars last year.

BUFFALO

The situation must remain much as it is for awhile, for the shortage of cars is such that all other influences are slight in comparison. There are but few cars for anybody.

At the same time, consumers are refusing to buy, on the ground that they can bring prices down. They demand $2.50 and look on the reports of even the most candid shipper as a mere effort to sell coal. Consumers who have coal on hand are willing to use it rather than buy at present prices. If this state of things does not produce a panic before long it will be only because conditions change for the better soon. The country is bound to see a car service for awhile that is largely confined to the moving of perishable freight.

Prices are no more uniform than they were. Some shippers who have been able to hold their customers up to the real needs of the situation can sell coal above $6, but possibly as much is sold at $4 and occasionally less. A good average is $5.25 for gas lump, $5 for Pittsburgh steam lump, $4.25@$4.75 for all mine run, with slack usually a little higher than mine run.

Northwest

Heavy Volume of Coal Reaches Northern Docks

September Cargoes Exceed Best Previous Month of 1922—Some Rail Anthracite Is Welcomed—Looming Lake Strike Is Cause for Worry.

The upper ports are jubilant for the time being. Soft coal receipts are heavier than at any time during the present shipping season which means that enough bituminous coal is arriving to remove all danger of immediate distress. This region is counting on—and getting, to a certain extent—a good deal of rail coal from Illinois and Indiana. So the principal thing that worries it now is a strike of boat crews. Only sixty days of the shipping season remain.

The first hard coal of the fall has reached Milwaukee—by rail, not by boat. This coal is selling at the old retail prices while cities further north are talking about $22 rail hard coal—if it ever reaches them. The coal men at the ports are struggling to make up their minds whether to sign long contracts at present prices.

MINNEAPOLIS

After prolonged travail over the coal supply for the Northwest, there appears to be some real action. The month of September sees around 1,000,000 tons of coal delivered at the Lake Superior docks,—all soft coal. But some hard coal is now reported en route. The dumpings at the Lake Erie ports for the Northwest promise an equal or better showing for October, if the lake seamen's strike does not block things. Altogether, the coal supply situation looks the best that it has this season.

It is well established that barring transportation troubles the Northwest can get all the coal—at least soft coal—that it is willing to pay for. To get it, the current price at the mines must be paid. If the market or going price is above the "fair price" figure, it is a certainty that the coal will go to those who will pay the ruling price.

So dock men and jobbers generally are working to determine how much coal they will be safe in buying at the price now ruling, for it is felt that just as soon as the rush is over for the immediate needs for coal, there will be an easing of prices. But the dock season ends in less than eight weeks. If, in the course of five or six weeks, prices ease off, the owners of coal stored on the docks, bought at higher prices, will have to absorb the decrease.

Much less than the usual amount of hard coal is expected by Lake. It is possible that there may be some brought up all-rail, but it might have to retail for $22@$23 as against the old price of $17.50@$18.

MILWAUKEE

The arrival by rail of the first anthracite of the season was the outstanding feature of the coal market last week. The consignment consisted of about 1,000 tons of chestnut. It is being retailed at $16, with an extra charge of 75c. for carrying in. Another shipment of 119 cars is in transit.

No anthracite has been received by Lake as yet though an allotment of 2,100,000 tons has been made to Great Lakes ports. A conference is being held in Washington to determine Wisconsin's share, which is expected to be about 1,000,000 tons.

The general coal situation has been considerably brightened by liberal receipts of coal, forty-eight cargoes aggregating 377,099 tons having docked in September up to the 26th. It is safe to predict that September receipts will aggregate at least 425.000 tons. Up to this time June has held the record for receipts for the season, with 303,401 tons. Illinois and Indiana coal is coming in freely by rail.

The City of Milwaukee has absolved all coal contractors from the thermal unit requirement of their contracts so long as a federal pooling order remains in effect. The city contemplates buying its own coal in the Eastern market in future.

DULUTH

Approximately 432,000 tons of soft coal arrived here last week in fifty-four cargoes. Thirty-four cargoes are reported en route, and a general air of optimism prevails. Shipments of anthracite have not arrived, but it is thought that another week will see some hard coal in the harbor. When anthracite does arrive it is planned to apportion it throughout the territory in the proportion of orders booked. This will mean that Duluth dealers will not have first call on all of it.

Reports have it that a large amount of smokeless has been ordered by householders for furnace use. This has been brought about by the sudden cold weather, which foretells the advent of winter. The price on this is around $12. The amounts put in in each case have only been enough to tide the consumer over until the period when it is thought hard coal will be available. Briquets are quoted at $10.50 and coke at $12.

The I. C. C. has warned that demurrage will be charged on cars here after 48 hours. There has been no shortage of cars so far but it is feared that there would be if some of the present practices were permitted to continue. The demurrage charge has been put on as a preventative measure.

Independent mining companies on the Iron Range are starting operations in a way that shows more promise than at any time for the past year. They seem to be confident that there will be no shortage, and are laying plans to mine throughout the winter.

New England

Well Stocked in Advance, Consumers Not Buying Now

Price Trend Confirms Disinclination to Buy Now for January Use—Congestion at Railroad Wharves Fails to Strengthen Spot Market—Oversupply at Roads and British Receipts Softening Factors.

There continues no improvement in the current market. Buyers have so generally anticipated their wants during the summer that with few exceptions they are well stocked for months to come. They are still disinclined to make purchases that will not be needed until after Jan. 1, and price development from week to week only confirm their attitude.

High-grade Pocahontas and New River have been offered down to $9.50 per gross ton, on cars Boston, and notwithstanding congestion at railroad wharves there is no sign of firmness in the spot market. Hampton Roads shippers now have an oversupply, the all-rail shippers are actively seeking business, and continued receipts of British coal are further softening market factors.

At Hampton Roads the deficit of a month ago has been changed now into a surplus of upward of 100,000 tons, coal in excess of boats waiting, and while we have heard no quotations at less than $7.85 f.o.b. vessel, it would not be surprising to see a further drop. There are still rumors of short car supply on the Southern roads, but orders are none too plentiful, and it is hard to see how there can be any advance in quotations for the present.

Grades from central Pennsylvania are being freely offered, and while movement was tolerably good during September there is beginning to be a slight falling off in the quantity coming through the Hudson River gateways. Prices have also eased materially, and there are several groups of mines that will soon be obliged to curtail production. The volume via the Philadelphia and New York piers is still light, the general situation favoring movement from Hampton Roads.

Cargoes of British coal arrive from day to day, and from present indications will continue arriving until well after Oct. 15. There has been slightly less delay in handling these, due partly to fewer arrivals and partly to the number of private docks that have been utilized. Strange to say, buyers are still being canvassed for new purchases abroad, both coal and freights having been quoted recently at materially less figures.

Cincinnati Gateway

Situation Made Obscure by Baffling Cross Currents

Several Sets of Prices for Smokeless—Weakness in Steam Shown by 50c. Drop—Lake Buying Ceases as Seamen's Strike Impends—Barge Movement on Ohio Gains.

Cross-currents without leaving any clear indication of their significance have been noticeable here for the past week. The smokeless situation is badly muddled. Three or four different sets of prices prevail. Steam coal has shown a greater tendency toward weakness and has dropped 50c. Gas and byproduct, while suffering a slight decline, is still in demand.

Lake buying practically ceased with the seamen forcing the issue to a strike. Railroads are badly jammed. A better volume is coming down the Ohio by barge than has been noted for months. The supply of empties at the mines has dwindled down to almost the zero point with a large number of loads lying on all of the converging coal roads still waiting movement to the gateway.

CINCINNATI

More retail buyers are on the market than for several months. They want coal for immediate shipment but are prepared to buy only from hand. to mouth unless contracts that are within reason can be entered into. Little lump was to be had below $6 and from this the price ranged on up to $7.50 for choice New River, Pocahontas, Thacker and Hazard. The market is not overburdened with offerings. The make of slack is still so small that it is worth the price of mine run.

There are three prices on smokeless. Some companies have their October prices out, showing the figures that Hoover set, plus commission. Others have advanced this $1, plus commission, making the values $6.21 for prepared, $5.94 for mine run and $5.94 for screenings. Both of these prices are for booked orders—the coal to be delivered when the mines catch up with back business. Then there is a higher spot price for quick delivery.

There has been little change in the retail situation except that dealers are refusing to take on any new business until they can get caught up.

HIGH-VOLATILE FIELDS

Kanawha

The region was greatly handicapped during the week ended Sept. 23 by an inadequate car supply. However, agreement was reached between the C. & O. and striking shopmen and it seemed probable that ultimately there would be a better supply of cars but improvement will be necessarily slow. Little fuel is finding its way eastward owing to the poor demand at Tidewater. Much of the output is being shipped to the Lakes, about 15 per cent of the coal so destined moving under service orders.

Logan and Thacker

Logan mines are not finding it possible to produce more than 40 per cent of capacity owing to a limited car supply, but conditions are being gradually improved. Much coal is being shipped to Lake points where congestion is retarding the process of dumping. There is a strong demand for egg and lump but mines as a rule are not preparing much coal owing to the continued heavy demand for mine run which commands a price of about $5 a ton.

Keneva - Thacker mines are also hampered by poor transportation facilities, limiting the region to about 60 per cent of capacity. Much of the coal is going to the Lakes and to Inland West markets, with the railroads also securing a generous share. Inquiries are numerous for prepared grades for which high prices are being offered.

Northeastern Kentucky

Although the potential capacity of the field has been built up to 320,000 tons not more than 80,000 tons are being produced. There is an ample market for all the coal which can be produced at prices ranging $5.50@$6. Buyers are offering as high as $7.50 for prepared grades, but there is little egg or lump to be had.

LOW-VOLATILE FIELDS

New River and the Gulf

Although an agreement has been reached between the C. & O. and its striking shopmen, not enough men are at work to materially change conditions and mines in the New River region are struggling along with a very meager supply, not averaging over 30 per cent. Western prices are holding up but there is little equipment available for these shipments. With so much more coal going to Tidewater, the price is softer there. There is a strong demand for prepared grades.

Gulf mines also are laboring under a transportation handicap and the output is not averaging more than 40 per cent of capacity.

Pocahontas and Tug River

Although more coal is being produced proportionately in the Pocahontas field yet the output is not over 55 per cent of capacity. The trouble is due to accumulation of loads on the N. &. W. Tidewater and other Eastern shipments are heavier. There is a particularly strong demand for prepared grades. Western shipments are partly embargoed.

With car supply not exceeding 30 per cent, Tug River mines are not producing over 75,000 tons weekly. Under existing conditions it is proving to be rather a difficult matter to get coal through to Western markets. There is a strong demand, however, for all grades. Most companies are confining themselves to the production of mine run, which ranges $4.50@$5.50 a ton.

Coke

CONNELLSVILLE

Complaint of car shortages is louder and more widespread. Apparently the placements are fully as large as formerly, probably somewhat larger, but with greater working forces the operators feel the restrictive influence more keenly. The supplies are also very irregular, causing irregular drawing of ovens.

There are still thousands of "strikers" in the region but the strike as a general industrial factor was eliminated some time ago, the region's production being entirely a matter of car supply. Many plants are still closed on account of strike, but if these plants were to attempt resuming that would not increase the total car supply of the region.

The market is stiffer, with prices on the whole a shade higher. Demand of retail dealers for furnace coke is widespread and mounts up to quite a tonnage. Small lots are taken, such as would hardly interest a blast furnace, but in the aggregate this competition is a factor in making it still more difficult for any furnace to pick up enough coke to base an operation upon. Foundry coke is in somewhat wider demand, with offerings quite limited. The market is quotable at $11.50@$12.50 for furnace coke and $13.50@$14.50 for foundry.

The *Courier* reports production during the week ended Sept. 23 at 80,950 tons by the furnace ovens, and 24,390 tons by the merchant ovens, making a total of 105,340 tons, an increase of 5,550 tons.

UNIONTOWN

Inability of railroads to provide cars is now the only factor curtailing production. The H. C. Frick Coke Co., largest employer of labor in the region, has increased production to 80 per cent of capacity and could further add to the output were more cars made available.

Strange as it may seem with the known coal shortage the market softened last week and operators and brokers are not finding it any too easy to dispose of tonnage. The market is declared especially soft on so-called "line shipments" and operators report that the Great Lakes, destination of much tonnage in the past few weeks, is jammed and cancellations are in order. Most sales were closed this week upon a basis of $3.75@$4.

Defections are occurring daily in the ranks of the strikers but the drift back to the mines is yet lacking substantial proportions. Operators announce that practically all strikers have been evicted and that plants are being reorganized upon a permanent basis.

BUFFALO

The supply is very light and demand is only moderate. Jobbers quote 72-hr. Connellsville foundry at $12.50@$13; 48-hr. furnace, $11.50@$12. Add to this $3.28 to cover freight.

News Items From Field and Trade

ALABAMA

Announcement has been made of the appointment of **Joseph Youmans** as general manager of the Warrior River Service of the Mississippi-Warrior barge lines. Mr. Youmans will have complete jurisdiction over this branch of the service. He assumed his duties Oct. 1, succeeding **Henry T. DeBardeleben**, who resigned some time ago.

The Alabama Fuel & Iron Co. has provided electric safety lamps for its miners employed at its Acmar and Margaret operations in St. Clair County in order to minimize the possibility of gas explosions at these operations.

COLORADO

The Rocky Mountain News reports that **Capt. James I. Smith**, its mining editor, and **Harry F. Nash**, general manager of the Oakdale Coal Co., both of Denver, have been appointed by Gov. Oliver H. Shoup and Mayor Dewey C. Bailey of Denver as their delegates to the meeting of the American Mining Congress to be held in Cleveland early in October.

The Turner mine, near Walsenburg, until recently under lease to the **Turner Coal Co.**, has been taken over by the lessors, **The Calumet Fuel Co.**, and will henceforth be operated by them as their Calumet mine; the Calumet company is a part of the **Utah Fuel Co.** of Salt Lake City. Frank Cameron, vice-president and general manager; C. B. Hitchkiss, assistant general manager, and A. C. Watts, chief engineer, have returned to Salt Lake City after a few days spent at Calumet mine.

I. T. Robinson has resigned his position with the Danson & White interests in Routt County, and has returned to Billings, Mont.

ILLINOIS

R. W. Arms, of the department of mining engineering of the University of Illinois, Urbana, will leave the university Nov. 1 and join the staff of Robert & Shaefer, contracting engineers. He will have charge of the department of dry concentration for this firm, directing a new process for dry cleaning of coal. He was been at the university since 1917.

The Shuler Coal Co. has been incorporated to conduct coal-mining operations on several thousand acres of land in Henry and Mercer counties. Charles Shuler of Davenport, Iowa, is the president. Hugh Shuler, of Des Moines, and Jacob Scheib of Rapid City, Iowa, are the other stockholders.

Five men were killed and two injured Friday, Sept. 29, when an explosion occurred in the Lake Creek mine of the **Consolidated Coal Co.**, near Johnston City. Three of the dead were surveyors and the other two were miners who were near the room in which the explosion occurred. It is unofficially reported that two miners smoking pipes were tamping a shot in a room, while surveyors were working there. A spark from one of the pipes is said to have fallen in a powder keg, causing the explosion. An investigation was to have been completed early this week. The five dead are Paul Best, Lee Bailey, and Harry Shaw, all surveyors, of Collinsville, Ill., and Marcus Kalowitch and Pete Castrola, miners, of Johnston City.

INDIANA

The Dana Coal Mining Co. of Terre Haute and the **Metropolitan Fuel Co.** of Indianapolis were sold at public auction recently. **George Hilgemeier**, a well-known retail dealer of Indianapolis and a member of the firm of F. Hilgemeier & Bros., purchased the mining company for $95,000. **Charles W. Craig**, also of Indianapolis, bought the fuel concern for $20,100. Receivers were named for both companies last year.

John Stark, general superintendent for the Bogle Coal Co. and two workmen were badly burned by a gas explosion recently at Bogle Mine No. 1 near Clinton.

KENTUCKY

Max Milligan, who has been in charge of the Atlanta office of the **Harlan Coal Co.**, has come to Louisville as general sales manager of the company's Louisville office. **Elmore Manning**, who has been acting as general sales manager, will take charge of the Cincinnati or northern office as northern sales manager.

Mayor Quin of Louisville has named five delegates to the 25th annual convention of the American Mining Conference and National Exposition of Mining and Mining Equipment to be held at Cleveland, Oct. 9 to 14. The men named are **Kenneth U. Meguire**, of the Harlan Coal Co., **R. C. Tway**, of the Tway Coal Mining Co., **Fred M. Sackett**, of the Speed Mines; **C. E. Reed**, of the West Kentucky Coal Bureau, and **A. G. Butler**, president of the Louisville Engineers' & Architects' club.

MASSACHUSETTS

The Webber Coal Co., Boston, Mass., was recently established by Joseph Miller, to engage in the retail coal business.

The Boston Elevated Ry. Co. has commenced work on the construction of an elevated coal pocket, to cost approximately $6,000. The pocket will have the latest type equipment.

MINNESOTA

The mayor's fuel committee in Minneapolis urges the quick release of coal-carrying cars and any other action that may contribute to increased transportation efficiency as the best way to aid the coal situation. The committee anticipates no reduction in hard coal prices and sees but little hope for reductions in soft coal. It does not expect a normal supply of anthracite to reach the city.

NEW MEXICO

The Weaver mine tipple of the **Gallup-American Coal Co.**, at Gallup, was recently completely destroyed by fire. The company has not yet decided on future plans.

The Grenko Coal Co. has just installed the first low-vein shortwall to be used in the Gallup field. The machine is successfully cutting in a 26-in. vein.

NEW YORK

Bids were received by the **Board of Purchase of the City of New York** on Sept. 27 for supplying 93,082 tons for anthracite and bituminous coal to fifteen city departments. Bids were received from fifteen concerns. Bids received on buckwheat delivered ranged $6.43@$6.47 per ton; on rice, $5.48@$6.74; on barley $5.44@$5.75. The bid on 3,000 tons of buck, $3, delivered at the Hart's Island Reformatory was $4.42, on 27,500 tons of buck. 1, at the St. George Staten Island Ferry Coal Pockets for the ferry boats was $6.43.

OHIO

The Atomized Coal Co. has been chartered with a capital of $10,000. Incorporators are Russell Errett, John P. Errett, F. W. Geiger and F. P. Glosch.

The Uhrig Coal Co., Nelsonville, has been chartered with a capital of $15,000 to mine and sell coal in the Hocking Valley field by D. H. Armstrong, A. H. Schory, R. W. Maupin, O. P. Amann and E. R. Davis.

PENNSYLVANIA

The Lehigh Valley Coal Co. has filed an appeal in the Dauphin County Court from the tax levied against it under the anthracite tax law of 1921. The sum of $312,013.28 is involved. The company has not only raised constitutional questions and attacked the system of the operation of the law, but has protested against the added valuation placed on the coal prepared for market. The company claims the valuation fixed is excessive and has raised the question of the sale of a considerable portion of its product in other states.

A new high mark in the payment of corporation taxes in Wilkes-Barre has been reached by the **Lehigh & Wilkes-Barre Coal Co.**, who will pay $224,778.48 in 1922 school taxes. **The Lehigh Valley Coal Co.** has paid school taxes amounting to $21,000.

Every day is moving day in Windber and to date more than 1,000 families have moved out of the district to the organized coal fields. United Mine Workers are making an effort to hold the men in the field and to continue their fight for recognition of the union but without avail. Eviction notices have been served on forty-five families at Cairnbrook by the **Loyalhanna Coal Co.**, and the heads of the families have requested the union to move them to other fields.

Seventy-five coke ovens which had been idle for a year and a half have been fired at the plant of the **Saxman Coal Co.**, at Peanut. At the Duquesne mine of the **Bradenville Coal & Coke Co.**, fifty ovens were fired recently.

WEST VIRGINIA

R. Dawson Hall addressed the Rotary Club at Charleston on Sept. 22 at one of its weekly sessions. His subject was "Some Misconceptions as to the Bituminous Coal Industry."

In the first serious accident at the Glen Rogers plant of the **Raleigh-Wyoming Coal Co.**, in Wyoming County, five men were crushed and killed on Sept. 23 when a skip, loaded with stone, in the 700 ft. shaft fell upon the men at work in a sump below the coal level. A sixth miner, who escaped death saw his comrades killed. The dead are: John Jasparac of Calumet, Mich.; Steven Marlanko, of Mohawk, Mich.; W. C. Vaden of Ironton, Va.; Lewis Cowlings, of Baden, Ala., and David Johnson.

C. A. Hammond has been appointed resident manager of the Tildesley Coal Co., of Cincinnati, at Williamson, and will be the company's buyer in the Thacker field, having his headquarters at Williamson.

P. A. Grady, who has been in the employ of the Sullivan interests for some time as mine inspector, has severed his connection and has accepted the position of general superintendent for the smokeless interests controlled by A. J. King, of Huntington.

The Dominion Fuel Corporation of Morgantown has been organized for the purpose of engaging in the coal business in Monongalia County, this concern having an authorized capital stock of $50,000. It was organized by Frank Tropf, Margaret Tropf, Frank L. Bowman, Pearl S. Bowman and Anna M. Tropf, of Morgantown.

WASHINGTON, D. C.

Donald B. Conn of Minneapolis, has been appointed manager of the Public Relations Section, Car Service Division of the American Railway Association, effective Oct. 1. He takes the place made vacant by the resignation of **A. G. Gutheim**, who left to practice law. Among Mr. Conn's duties will be those of making special studies, from time to time, of such subjects as may require special attention on the part of the Car Service Division, such as the movement of coal, grain, or any other of the important and seasonal commodities. Mr. Conn recently served as assistant to Conrad E. Spens, federal fuel distributor.

R. H. Sargent, A. A. Baker and J. B. Mertie, Jr., of the United States Geological Survey, have returned after the season's field work in Alaska.

S. B. Stone, of the staff of the Bureau of Mines, will have charge of the press relations division of the federal fuel distributor's organization.

A revised list of the various chapters of the **Joseph A. Holmes Safety Association**, together with the names and addresses of each secretary, is as follows: Butte safety chapter, Clyde DeWitt, Butte, Mont.; Newcastle chapter, J. P. Jones, Newcastle, Ala.; Dante No. 1 chapter (white) R. L. Ray, Dante, Va.; Dante No. 2 chapter (colored), T. W. Walthall, Dante, Va.; Wilder No. 1 chapter, Coleman Smith, Wilder, Va.; Empire Mines chapter H. Crouch, Grass Valley, Cal.; Leona Mines chapter, W. H. Shell, Leona Mines, Lee County, Va.; Cokedale chapter Charles Smith, Cokedale, Col.; South Fork chapter, James Graham, South Fork, Pa.; Desloge Consolidated Lead Co. chapter, H. J. Schiermeyer, Desloge, Mo.; Lilly-Cassandra chapter, Charles Lees, Lilly, Pa.; Frugality chapter, Charles L. Simmers, Frugality, Pa.; Fallen Timber chapter, Wm. T. Lamb, Fallen Timber, Pa.; Blandburg chapter, Jerry Hanagan, Blandburg, Pa.; Coalport chapter J. Frank Taylor, Coalport, Pa.; Pierce Florida chapter, H. E. Collins, Pierce, Fla.; Madera chapter, Robert Moore, Madera, Clearfield County, Pa.; Smoke Run chapter, George Finch, Smoke Run, Pa.; Mark Simmons chapter, Mae Sughrue, Munson, Pa.

Traffic News

The I. C. C. recently held a hearing in Louisville of the case in which the **West Kentucky Coal Bureau,** in behalf of western Kentucky operators asks through freight rates on coal from western Kentucky mines to the Northwest states, based on 25c. a ton over the rates contemporaneously in effect from the southern Illinois group mines.

Louisville & Nashville officials have absolutely refused to agree to the plan under which other roads settled their strikes with their shopmen, and have gone ahead recruiting new workers. Old employees have returned in large numbers, and almost a full shop force is now in sight. The **Illinois Central, Pennsylvania and Kentucky & Indiana Terminal** are going ahead on a non-union basis.

W. P. Tams, Jr., of Tams, W. Va., was in consultation recently with Washington attorneys in Beckley with reference to his petition before the I. C. C. to have the Virginian prorate on Western rates and to establish Western connection for coal loaded on Virginian rails. Hearing in this matter will come up before the I. C. C. in Washington on Oct. 16.

Schedules filed by the L. & N., proposing to increase rates on coal from Kentucky, Tennessee and Virginia, to various points in Iowa, Missouri and Nebraska, were suspended by the I. C. C. until Jan. 18. The commission also suspended until Jan. 18 schedules proposing to increase rates on coal from mines in Kentucky on the Cumberland & Manchester to numerous points in the North, Northwest and Southeast, which would be accomplished by adding specified amounts to the L. & N. base rates from Barbourville, Ky.

The present rate on coal from eastern Ohio to Cleveland is $1.70, having been reduced on Sept. 21 from $1.74. This is the result of an order of the Ohio Public Utilities Commission. When the carriers figured the new rates under "Reduced Rates, 1922," the promulgation of them on the differential basis resulted in rates which exceeded by 26 per cent the rates in effect Aug. 25, 1920, and the ruling of the Ohio commission simply restricts intra-state coal rates to a 26 per cent increase above the old rates referred to. The carriers have appealed from this ruling and the I. C. C. has set Oct. 19, Columbus, as the date and place for hearing the case.

The Coal, Coke & Iron Ore Committee, Central Freight Association Territory, Pittsburgh, will hold a public hearing on cancellation of rates on bituminous and cannel coal to points in C. F. A. territory, from stations on the Kanawha & Michigan, taking Group "D" rates, in Kanawha & Michigan Tariff I. C. C. No. 419. Hearing will be held at Room 606, Chamber of Commerce Bldg., Thursday, Oct. 12, 1922, at 10 A.M.

The new S. P. R. R. coal rate from Utah mines to stations in the San Joaquin Valley will be $6 instead of $7.65 and will take effect as soon as the new tariffs can be published. The new rate will allow Utah operators to compete with the mines in New Mexico in this territory.

Publications Received

Annual Report of Coal Mine Inspection and Mine Rescue Departments, 1920, by John H. Crawford, Commissioner of Labor, and James Sherwood, Mine Inspector, for the State of Kansas. Pp. 237; 6 x 9 in.; tables.

Geology and Mineral Resources of the La Harpe and Good Hope Quadrangles. by T. E. Savage and M. L. Nebel. Dept. of Registration and Education, Div. of the State Geological Survey, Urbana, Ill. Extract from Bulletin 43. Pp. 89; 7 x 10 in.; illus.

Geology and Mineral Resources of the Avon and Canton Quadrangle, by T. E. Savage. Dept. of Registration and Education. Div. of the State Geological Survey, Urbana, Ill. Extract from Bull. 38. Pp. 67; 7 x 10 in.; illus.

Second Annual Report of the Scientific and Industrial Research Council of Alberta, Can. Pp. 86; 7 x 10 in.; illus.

Annual Report of the State Coal Mine Inspectors of Wyoming, Dists. Nos. 1 and 2, for Year Ending Dec. 31, 1921, by Robt. T. Sneddon and Robt. V. Hotchkiss. Pp. 67; 6 x 9 in.

Geology and Mineral Resources of the Edgington and Milan Quadrangles, by T. E. Savage and J. A. Udden. Dept. of Registration and Education, Div. of the State Geological Survey, Urbana, Ill. Extract from Bull. 38. Pp. 96; 7 x 10 in.; illus.

Further Investigations of Illinois Fire Clays, by C. W. Parmelee and C. R. Schroyer. Dept. of Registration and Education, Div. of the State Geological Survey, Urbana, Ill. Exttract from Bull. 38. Pp. 149; 7 x 10 in.; illus.

Factors in the Spontaneous Combustion of Coal. By O. P. Hood, Bureau of Mines, Washington, D. C. Technical paper 311. Pp. 9; 6 x 9 in.; illustrated. Covers the sizes and temperature of coal at time of storage.

Application of the Geophone to Mining Operations. By Alan Leighton, Bureau of Mines, Washington, D. C. Technical paper 277. Pp. 33; 6 x 9 in.; illustrated. Describes the uses of the instrument in mining, especially in regard to mine rescue and surveying.

Association Activities

National Coal Association

The Government Relations Committee of the National Coal Association is composed of the following, appointed June 1, 1922: Bradley, J. G. (chairman), president, Elk River Coal & Lumber Co., Dundon, W. Va. Barker, G. H., vice-president, Maynard Coal Co., Columbus. Barnum, Walter, treasurer, Pacific Coast Co., 50 Church Street, New York City. Bockus, C. E., president, Clinchfield Coal Corp., New York City. Brydon, J. C., president, Quemahoning Creek Coal Co., Somerset, Pa. Cunningham, W. H., president, Cunningham, Miller & Enslow, Huntington, W. Va. Gallagher, Michael, general manager, M. A. Hanna & Co., Cleveland. Heiner, Moroni, vice-president, U. S. Fuel Co., Salt Lake City, Utah. Huff, W. H., president, Victor-American Fuel Co., Denver. Mahan, E. C., president, Southern Coal & Coke Co., Knoxville, Tenn. Maloney, A. J., vice-president, Chicago, Wilmington & Franklin Coal Co., Chicago. Megeath, W. F., president, Roundup Coal Mining Co., W. O. W. Bldg., Omaha. Quealy, P. J., president, Gunn-Quealy Coal Co., Kemmerer, Wyo. Taylor, H. N., vice-president, Central Coal & Coke Co., Kansas City, Mo. Yerkes, S. L., vice-president, Grider Coal Sales Agency, Birmingham, Ala. Davis, T. B., president, Island Creek Coal Co., New York City. Drennen, Everett, president, West Virginia Coal & Coke Co., Elkins, W. Va. Field, W. K., president, Pittsburgh Coal Co., Pittsburgh. Huff, Julian B., president, Latrobe Connellsville Coal & Coke Co., Philadelphia. Ord, W. D., president, Empire Coal & Coke Co., Landgraff, W. Va. Shillingford, G. Webb, secretary, Empire Coal Mining Co., Clearfield, Pa. Tway, R. C., president, R. C. Tway Coal Co., Louisville, Ky. Wright, F. P., general manager, Crescent Coal Co., Bevier, Ky.

The Foreign Trade Committee of the association, appointed as of June 1, 1922, is composed of the following members: Wilshire, F. W. (chairman), vice-president, Consolidation Coal Co., New York City. Bockus, C. E., president, Clinchfield Coal Corp., New York City. Brophy, J. S., president and general manager, Piedmont & George's Creek Coal Co., Frostburg, Md. Cunningham, W. H., president, Cunningham, Miller & Enslow, Huntington, W. Va. Heiner, Moroni, vice-president, U. S. Fuel Co., Salt Lake City, Utah. Hutchinson, S. Pemberton, president, Westmoreland Coal Co., Philadelphia. Watkins, T. H., president, Pennsylvania Coal & Coke Corp., New York City. Adams, W. C., president, Adams, Rowe & Norman, Birmingham, Ala. Burrows, Lemuel, president, Castner, Curran & Bullitt, Inc., New York City. Calloway, A. W., president, Davis Coal & Coke Co., Philadelphia. Caperton, G. H., president, New River Coal Co., Charleston, W. Va. Coleman, G. D., Nant-Y-Glo Coal Mining Co., Philadelphia, Pa. Dexter, Geo. M., president, Dexter & Carpenter, Inc., New York City. Farrell, T. F., second vice-president, Pocahontas Fuel Co., Inc., New York City. Gross, R. H., president, New River Co., 85 Devonshire St., Boston. Hood, Kuper, general manager, Houston Coal Co., Cincinnati, Ohio. Jacobs, Charlie, vice-president, Whitney & Kemmerer, Philadelphia. Knode, R. H., vice-president, Stonega Coke & Coal Co., Philadelphia. Puckett, W. M., president, Cabin Creek Consolidated Coal Co., Charleston, W. Va.

Recent Patents

Pulverized-Fuel Carburetor and Feeder. William H. Whitaker, Shelbyville, Ill., assignor to American Atomized Fuel Co., Shelbyville, Ill., 1,424,053. July 25, 1922. Filed Oct. 5, 1920; serial No. 414,926.

Flotation Apparatus. H. C. Colburn and E. A. Colburn, Denver, Col., assignors to The Colburn Flotation & Engineering Co., Denver, 1,415,314. May 9, 1922. Filed Jan. 3, 1919; serial No. 269,517.

Loading Machine. Wm. Schluter, Jr., Bellaire, Ohio, assignor of one-third to C. H. Dankworth and one-third to G. W. Dankworth, Bellaire, 1,415,485. May 9, 1922. Filed March 29, 1921; serial No. 456,724.

Rock Drill. Wm. A. Smith, Phillipsburg, N. J., assignor to the Ingersoll-Rand Co., Jersey City, N. J., 1,415,597. May 16, 1922. Filed Aug. 13, 1920; serial No. 403,353.

Mine-Loading Machine. James P. Mosier, St. Francois and Ernest R. Campbell, Desloge, Mo., assignors to the National Lead Co., New York City, 1,416,050. May 16, 1922. Filed March 15, 1920; serial No. 366,168.

Coal Chute. Henry Steinbach, Scranton, Pa., assignor to John J. Steinbach, Scranton, 1,416,073. May 16, 1922. Filed Nov. 5, 1919; serial No. 335,967.

Utilizing Coal Slimes. Heinrich Brune and Heinz Horst, Frankfort-on-the-Main, Germany, 1,416,546. May 16, 1922. Filed June 30, 1920; serial No. 393,212.

Operating Mechanism for Automatic Stokers. E. B. Bryant, Philadelphia, Pa., assignor to the American Engineering Co., Philadelphia, 1,416,547. May 16, 1922. Filed July 11, 1919; serial No. 310,237.

Mining and Quarrying Machine. Fred Oldroyd, Cincinnati, Ohio, 1,416,742. May 23, 1922. Filed June 16, 1921; serial No. 478,090.

Check-Holder for Mine Cars. James E. Whewell and Harley I. Yoder, Hollsopple, Pa., 1,417,006. May 23, 1922. Filed Dec. 14, 1920; serial No. 430,811.

Mine Car. Walter A. Dorsey, Columbus, Ohio, assignor to The Bonney-Floyd Co., Columbus, 1,417,043. May 23, 1922. Filed March 6, 1918; serial No. 220,792. Renewed Aug. 11, 1921; serial 491,560.

Mine-Car Wheel. Charley Malt, Irwin, Pa., 1,417,085. May 23, 1922. Filed June 1, 1921; serial No. 474,306.

Mine Car. Emmett L. Bailey, Williamson, W. Va., assignor of one-half to Robert L. Bailey, Williamson, 1,417,131. May 23, 1922. Filed July 24, 1919; serial No. 312,887.

Mining Machine. Frank Cartlidge, Claremont, N. H., assignor to Sullivan Machinery Co., Chicago, 1,417,716. May 30, 1922. Filed June 24, 1918; serial No. 241,723.

Mining Car. Wm. Kirchman, Van Buren, Ark., assignor to The Engineering Works, Van Buren, 1,417,834. May 30, 1922. Filed April 19, 1921; serial No. 462,632. Renewed April 18, 1922; serial No. 555,234.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street. New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.